American Artisan

THE WARM AIR HEATING AND SHEET METAL JOURNAL

FOUNDED 1880

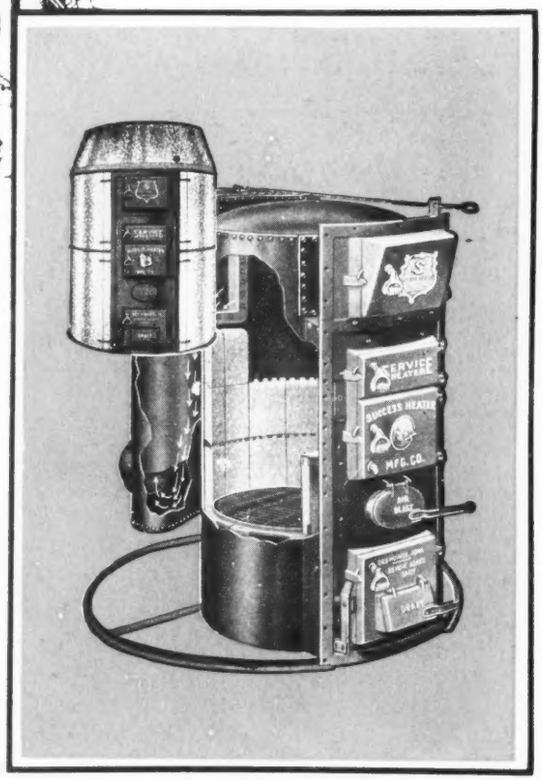
RIVERSIDE CHURCH

NEW YORK

More than 50,000 pounds of lead-coated copper were used to roof and water-proof the Riverside Church, New York City. More than 10,000 pounds of copper are buried in the masonry, out of sight, as protection for the intricate stone work of this structure. Details of this interesting job are in this issue.

AUGUST 2, 1930

Make every warm air heating job a complete success!



FIRST—Sell your prospects on the IDEA of Modern Warm Air Heating

Then they will expect and want only the best equipment

WHEN you first convince your prospect that warm air heating is the finest, healthiest and most practical form of heating for his home—church, school or factory—you have no trouble convincing him that a first class scientifically engineered installation is necessary. When you have done this the prospect will expect and want only a truly high quality heater. Then you can make the installation a complete success—satisfaction for the customer and a good profit for yourself assured.

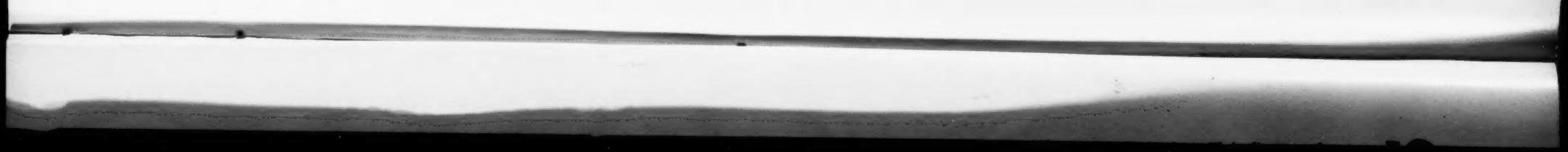
It will pay you to concentrate your approaches on prospects you have been overlooking—prospects who will be interested in this modern high grade form of heating and are able to pay for it. Besides, prospects of this kind offer opportunities for sales of heat regulators, blowers, fans, humidifiers, air filters, oil and gas burners, etc.

Success dealers are finding it far more profitable to sell high grade installations and high grade heaters—that's why they choose the Success line.

Success Heaters are first quality from every standpoint—design, material and construction. The line is complete, too—a high grade heater for every warm air heating need. Write for the Success catalog and ask us to tell you all about "The Big Success Idea"—our exclusive, practical sales plan.

SUCCESS HEATER MANUFACTURING COMPANY, DES MOINES, IOWA

SUCCESS HEATERS



D. H. RICKARD
Secretary and Treasurer of The Henry Furnace & Foundry Company

The Men behind MONCRIEF FURNACES

The common idea of treasurer and credit man of a big concern is a surly, hard-boiled individual who eats nails, breathes fire.

That description may fit many financial heads of companies, but D. H. Rickard, whom everybody calls "Deb," is not that kind of man at all. He is, in fact, just the kind of fellow you enjoy smoking a pipeful of tobacco with.

Probably the fact that he has had a considerable sales experience out on the road accounts for his being more human than men in his position are supposed to be. He knows what the furnace dealer's problems are and he likes to look at them from the dealer's side of the fence.

"Deb" knows figures forwards and backwards; and he knows human nature just as thoroughly. That is why he is a good man for his job and why he is so human himself.

Another reason for his broad understanding is, probably, the fact that he spent five years in public office work. That was his first job. Then he had five years of banking experience. In these positions, he met all kinds and conditions of men.

"Deb" Rickard came with The Henry Furnace & Foundry Company in 1917 as credit manager. He was elected Secretary and Treasurer and a member of the Board of Directors in 1920, positions which he has held with great credit continuously since.

* * * *

"A penny saved is a penny earned." Probably it was a Scotchman who first said that.

"Time is money." No matter who discovered that fact.

The point is, the dealer who handles the Moncrief line saves a lot of time in installing, and so makes more money, because of the speed and ease with which Moncrief Furnaces are assembled on the job.

Each contact edge of every section is ground and finished straight and smooth at the foundry; and the sections of a furnace are assembled and shipped as a complete unit.

There is money in the Moncrief line for enterprising dealers. Send for particulars.

Send for descriptive literature

THE SERIES "C"

We supply everything used in a warm air heating job

THE HENRY FURNACE & FOUNDRY CO.

3471 EAST 49th STREET **CLEVELAND, OHIO**

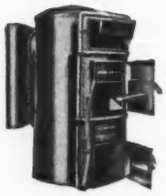
THE SERIES "C" CAST FURNACES

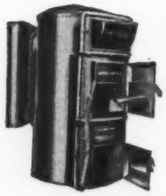
THE NEW MONCRIEF STEEL FURNACE

Published Every Other Week by Porter, Spofford, Langtry Corp., 139 North Clark Street, Chicago, Illinois. AMERICAN ARTISAN—the Warm Air Heating and Sheet Metal Journal—entered as second class matter, January 29, 1930, at the Post Office at Chicago, Illinois, under the act of March 3, 1879. Formerly entered on June 25, 1887, as American Artisan and Hardware Record.

INDEX PAGES—14 and 56 **[VOL. 99, NO. 16—$2.00 PER YEAR]** **BUYERS' DIRECTORY—52 and 54**

"Busy Times" Are Just Ahead





WITH the brisk days of autumn and early winter, business will stir from its summer slumber—stretch a bit—and get down to work. ***Busy times are just ahead.***

Wise furnace dealers are polishing their displays—looking forward to a busy season. Now is a time of preparation for rushing winter days.

Let the Western Steel Furnace help you to better profits.

Write for information

WESTERN STEEL PRODUCTS CO.

132 Commonwealth Ave.—Duluth, Minn.

Group One

Pittsburgh, Pa. — *Pittsburgh Furnace Parts Company*

Ravenna, Ohio — *Ravenna Furnace Company*

Cincinnati, Ohio — *Niehaus Furnace Repair Company*

Atlanta, Ga.—*Moncrief Furnace Company*

Chicago, Ill.—*Western Steel Products Company*

Group Two

St. Louis, Mo.—*MacRoy Supply Co.*
Kansas City, Mo.—*Kansas City Furnace Co.*
Duluth, Minnesota—*Marshall-Wells Co.*
Omaha, Nebraska—*A. Y. McDonald Mfg. Co.*
Lincoln, Nebraska—*A. Y. McDonald Mfg. Co.*
Sioux City, Iowa—*A. Y. McDonald Mfg. Co.*
Minneapolis, Minn.—*A. Y. McDonald Mfg. Co.*
Fort Dodge, Iowa—*Leighton Supply Co.*
Fargo, N. D.—*Fargo Cornice & Ornament Co.*

Group Three

Seattle, Wash. — *McPherson Furnace & Equipment Co.*
San Francisco, Cal.—*Pacific Sheet Metal & Furnace Co.*
Winnipeg, Man. — *Marshall-Wells Co.*
Saskatoon, Sask. — *Wood-Vallance Co., Ltd.*
Regina, Sask. — *Wood-Vallance Co., Ltd.*
Edmonton, Albta.—*Marshall-Wells Alberta Co., Ltd.*

Say you saw it in AMERICAN ARTISAN—Thank you!

A Merchandising Plan To Help You Sell WATERBURY Furnaces

MODERN day merchandising requires something more than an excellent product to make sales. You must TELL and SHOW your prospects the advantage of buying YOUR product if you expect to sell them.

The Waterbury Merchandising Sales Plan helps you do this. It is a well-balanced program of attractive circulars mailed to your good prospects absolutely free of charge, attention-compelling window display, newspaper advertising service and engineering planning service.

All this service is a part of the Waterbury Franchise, furnished to Waterbury Dealers without charge. It turns prospects into customers for you—customers who will be thoroughly satisfied boosters for you and the Waterbury.

If you are looking for some real profits in the heating business—if you want the ONLY All-Steel, Welded, Seamless Furnace on the market—if you want some real sales co-operation that will make money for you, send the coupon below for the Waterbury Proposition.

Mail This Coupon NOW!

The Waterman-Waterbury Co.

1122 Jackson St. N. E. Minneapolis, Minnesota

Complete Stock Carried in

PHILADELPHIA DENVER TACOMA
KANSAS CITY CHICAGO PITTSBURGH
SAN FRANCISCO

The Waterman-Waterbury Co.
1122 Jackson St., N. E.
Minneapolis, Minn.

Please send me complete details of the Waterbury Franchise and Merchandising Plan.

Name .....

Address .....

.....

Mention AMERICAN ARTISAN in your reply—Thank you!

A section of the library in the offices of **AMERICAN ARTISAN** *Chicago*

We hope you are going fishing—

or touring, or boating, or golfing, or whatever it is that your better half decides you are going to do this summer but we also hope that your route takes you to Chicago because we want you to visit us.

And of course that means that you are cordially invited to have your mail sent here, to use our information files, telephones and stenographic service.

And if you can't wait until you get home to read the accumulated copies of the ARTISAN, we'll gladly supply you with the issues you've missed so you can read them on your way home.

139 North Clark Street
Chicago
Opposite the City Hall

American Artisan
THE WARM AIR HEATING AND SHEET METAL JOURNAL

HESS

NEW AUTOMATIC FURNACE

WELDED STEEL — LEAK-PROOF CONSTRUCTION

NOW is the time to push furnace sales. The Hess Automatic Furnace is offered in two sizes, capacity up to 755 sq. in. of heat pipe area, to cover a large share of your furnace sales. Built in quantities, as a unit, completely equipped with:

1. ***Automatic humidifier—insures humidity.***
2. ***Automatic, electric, thermostatic control. Controls room temperature automatically—Saves fuel and gives uniform heating.***
3. ***Electric booster blower, about doubles ordinary gravity circulation and insures positive heat distribution — more efficiency and comfort.***

It gives you a complete heating unit of the latest type at a price but little higher than the ordinary furnace of the same capacity, without these modern features. Here is just the furnace your customers have been looking for. We offer an exclusive dealer proposition where we are not represented. Investigate.

The New Hess AIRWATER unit is designed to fit the average furnace in the ordinary size home. It washes the air, purifies it, and gives a cooling circulation in the summer. In winter it delivers clean and properly humidified warm air under pressure throughout the house. It will pay you to investigate the money making possibilities of this new air conditioning system for homes. Complete information on request.

HESS WARMING & VENTILATING CO.
1207 South Western Ave. Chicago, Ill.
Branches—Detroit and Milwaukee

Hess Warming & Ventilating Co.,
1207 South Western Avenue, Chicago, Illinois.

Please send me complete information on your dealer plan as checked below:

☐ Hess Automatic Furnace
☐ Hess AIRWATER Unit

Name.....
Address.....
Town.....State.....

The severe hot spell is helping dealers sell more and better warm air heating jobs....

BOTH furnace manufacturers and dealers once thought that the best thing to do in summer was to forget business as folks could not be interested in heating when perspiration was streaming down their faces.

That was back in the days when you sold *furnaces* and not *warm air heating.*

Public thought and action have changed a lot since then. Today live dealers are selling their better jobs in the summer. Many of them sell a complete heating *and cooling* system. Blowers and air washers are part of good warm air heating systems but can be effectively used to sell cooling as well.

For jobs like these and any good heating job use the—

SMOKELESS

THE PIPE AND ATH-A-NOR PIPELESS FURNACE

THERE'S real quality in this furnace. It's built for powerful, efficient and smokeless heating.

The Patented Three-Way Air Blast makes it an exclusively designed heater that gets sales at any time.

Besides the Ath-A-Nor, the May-Fiebeger line includes several styles and a complete range of sizes in both cast iron and steel furnaces. Every May-Fiebeger furnace is high grade and reasonably priced.

The May-Fiebeger Co.
Newark, Ohio

Some Plain Facts About Profits

You Deserve a Fair Profit On Every Job . . . . . But Do You Get It? . . . . . .

Many Have Used This Method In Their Business With Success

Saint Louis, Missouri:—

It has been demonstrated time after time that there is only one sure road to profit and success in the furnace business. This road has been discovered by hundreds of dealers while hundreds of others have not been so fortunate. There is no charted course to guide the way, but those who observe a few fundamental rules, are certain to reach their objectives.

All along the road are danger signs and warnings which make the trip less hazardous. Here are a few: Don't Take a Job that Will Not Net a Fair Profit. Know your costs, and remember that taking a job at a loss just to spite your competitor is bad business. Don't Figure and Sell Warm Air Furnaces on a Weight Basis. Weight is no longer the most important consideration, and there are furnaces that are not in the tonnage competition. Sell warm air heating—not a chunk of iron.

"Remember that Modern Warm Air Heating Requires the Best Type of Combustion Unit to Meet the Present Day Requirements." It is not the only consideration in making every installation a successful one, but it is easily 90% of the job. Make sure you choose the right furnace and then go ahead.

"Decide to sell the better class of installations that offer a real opportunity to earn a fair profit." The right kind of furnace makes this possible. "Don't wait for the prospect to come to you—cobwebs may grow over the door. Dig out the prospects yourself. It takes something more than *mere wishing* to get business today."

When you consider the furnace you should sell, examine the "AFCO" line of Boiler Plate Furnaces. All the knowledge and experience gained through 30 years of furnace manufacturing are built into the modern "AFCO" combustion Units. All the best features of design and construction that go to make the ideal furnace will be found in the "AFCO."

Since your whole success centers around the furnace and the service it gives to your customer, you should choose the "AFCO." There is no better furnace to be had, so why sell an inferior product.

A good example of "AFCO" quality is given in this letter from the Smith Heating & Sheet Metal Works of Springfield, Mo.

American Furnace Company
2729 Morgan St., Saint Louis, Mo.

Gentlemen: We have just installed one of your No. 348 American Furnaces in a $20,000.00 residence here. The owner took this furnace out of an old residence that he had torn down and put it in his new residence.

The only repairs that we used new was a cast iron inside feed pouch liner. This furnace will be equipped with an oil burner.

The writer thinks that this is a wonderful compliment in view of the fact that this is a fine residence, and the furnace had been subjected to twenty years of service prior to the installation in the new residence.

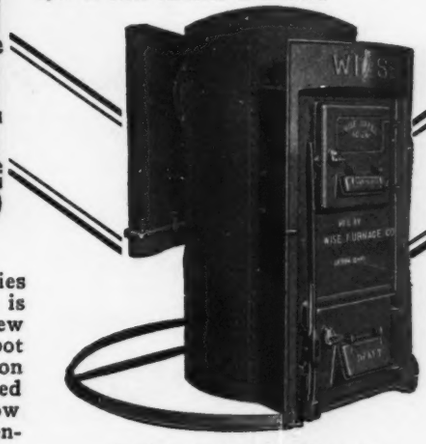
Respectfully,
(Signed) Mr. J. V. Smith.

"AFCO" Boiler Plate Furnaces offer you the biggest opportunity of the year to get in the real paying business. Full details of the "AFCO" Dealer plan will be sent upon request by addressing the American Furnace Company, 2719-31 Morgan St., Saint Louis, Missouri. Write today, you will not be obligated in any way.

all your purchases from one source

WISE FURNACES

BELOW is shown the New Wise Steel Furnace. A Wise product and a steel furnace having exclusive Wise features. Notice the Cast Iron Soot Box and Clean-Out on bottom of Radiator—the weak spot of steel furnaces eliminated.



THE Wise Open Dome 40 Series with Self Cleaning Radiator is even better than ever with its new One-Piece heavy Cellular Firepot and new Elbow Shaped Collar on inside of radiator which is turned up so that all the heat must follow the castings to the top before entering the flue.

THE Wise 20 Series Return Flue Radiator has a new Patented radiator. Now cleaning the radiator is easy. The feed chamber and the radiator are designed so that the fire flues are easily gotten at from the upper feed door with the soot falling directly into the firepot. Also equipped with the new Cellular Firepot.

Write for catalog No. 23

The WISE FURNACE COMPANY, *Akron, Ohio*

GILTEDGE *guaranteed* FURNACES

FOR fifty-five years the name GiltEdge has meant high quality furnaces. Today more than ever before GiltEdge Furnaces lead as to quality and workmanship.

The GiltEdge agency will add extra prestige and profits to your business.

Write today for full details regarding the GiltEdge 1930 sales plan.

R. J. SCHWAB & SONS CO.
283 Clinton Street **Milwaukee, Wis.**

LENNOX TORRID ZONE STEEL FURNACES

An Emblem of Quality

The dealer who has never sold Torrid Zone steel furnaces has no conception of the many advantages this furnace line offers. To say you are familiar with Torrid Zone construction is not enough. There are, free engineering service, newspaper and dealer help advertising, financial aid, an unusual variety of furnace sizes, quick deliveries made possible by large warehouse stocks, and a score of other Torrid Zone service features of vital interest to every furnace dealer. Why not investigate for yourself Torrid Zone possibilities. Write for complete information on the Torrid Zone line.

LENNOX FURNACE COMPANY, INC.
Marshalltown, Iowa Syracuse, N. Y. Toronto Winnipeg

BRILLION *FURNACES*

—ADD QUALITY AND LOWER YOUR COSTS

WITH Brillion Furnaces you can give your customers extra quality—at the same or even a higher price and add the saving in furnace cost to your profit.

It does not sound logical but it is true. Many Brillion dealers are doing it.

Brillion Furnaces boast all the latest features. They are modern, well made, correctly designed and molded from highest grade iron.

You've heard a lot about overhead—that's the secret. We can sell this finer quality at a low price because our costs are less.

Receive the benefit of our low manufacturing and selling costs—send the coupon today for full details

BRILLION FURNACE CO., 3715 Elston Ave., Chicago.
200-300 Park Ave., Brillion, Wis.
Send me full details and Catalog No. 80.

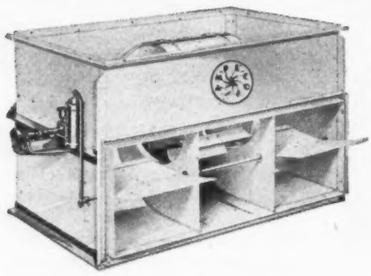
Name.....

Address.....

Sell it NOW for COOLING

AM-PE'-CO

ROTARY BLOWER



—and for superior heating next winter

JUST ask your prospects if they wouldn't like to have some of the cool air in their basement blown up into the living rooms through the warm air registers. The hot wave has made thousands of folks wish for a ***cooling system*** for their homes.

The Am-Pe'-Co will cool homes and a demonstration will prove to your customers that just as it moves cool air in the summer time it forces warm air in the winter months.

Get the BIG PROFITS by selling all year home comfort this new way—

The Am-Pe'-Co Rotary Blower with DAMPERED OUTLETS is operated by an oil pump and regulator of our own design insuring ***positive operation.*** As soon as the blower stops the dampers open automatically.

Write today, right now, for full details of construction and installation. Am-Pe'-Co superiority and prices insure good sales and profits

American Machine Products Company
Marshalltown, Iowa

LASTIK

WAMPUM BRAND

A superior product made by men who know what it must accomplish

FURNACE CEMENT

ODORLESS
—
PLIABLE
—
WILL NOT CRACK
—
FIRMLY KNIT
—
NON-POROUS
—
ACIDPROOF
—
WILL NOT SHRINK

MANUFACTURED to meet every technical requirement of the furnace builder or installer, LASTIK WAMPUM BRAND FURNACE CEMENT represents the results of two solid years of research and investigation. No longer an experiment, it compels the attention of the modern up-to-the-minute user.

It is easier to use and it stands up permanently. We know your installation problems and Wampum Brand is made to make this important part of your work thoroughly reliable.

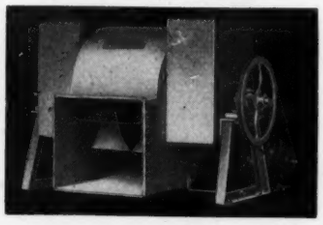
Order a can from your jobber today and you'll always use it

LASTIK PRODUCTS CORPORATION
General Offices, **Oliver Bldg., PITTSBURGH, PA.**
Also Manufacturers of LASTIK ROOF PAINTS AND CEMENTS—LASTIKALK—LASTIK DAMP-PROOFINGS

Furblo ***The Furnace Blower Everyone Recommends***

MANUFACTURERS have adopted FURBLO as standard equipment — jobbers catalog FURBLO exclusively —dealers everywhere find FURBLO the one and only satisfactory solution to the problem of mechanical warm air heating.

FURBLO is not a fan—but a blower. Quiet, efficient, powerful, sturdy, dependable. Guaranteed to always produce on even the hardest job.



Lakeside Company
Dept. A-8 Hermansville, Mich.

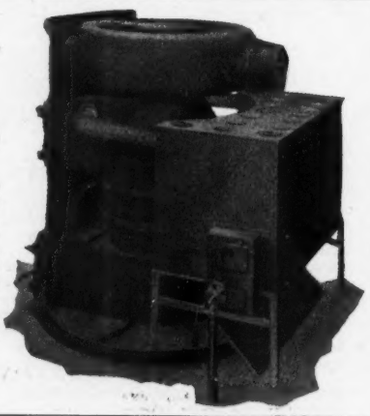
Two sizes fit practically all installations. Send for complete information.

Makers of Lakeside Ventilating Equipment

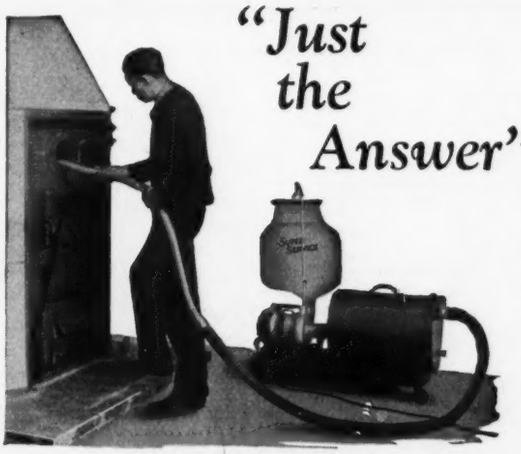
You can sell
GAS HEATING
to OLD as well as new customers with
The MUNKEL GAS ATTACHMENT

It fits any coal furnace—it heats both units giving extra large radiating surface. Simple, efficient, economical and easy to install. Stimulate business and make more profits with the Munkel Gas Attachment.

Write today for full details



The **MUNKEL-RIPPEL HEATING CO.**
"31 Years of Service"
Columbus, Ohio



"Just the Answer"

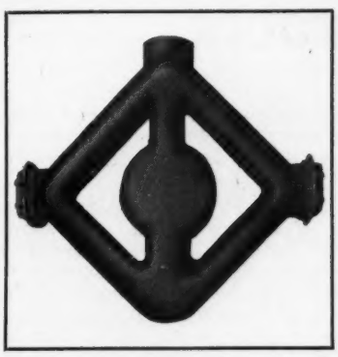
Our one-man outfit makes low overhead

QUIMBY Furnace & Roofing Co., Lincoln, Neb., write: "In our estimation this cleaner is just the answer for the small furnace shop, and several units would care for any big shop."

The picture tells why. It is compact, powerful, rapid—light. It is easy for one man, unaided, to clean four to six furnaces a day. One user averages $10.25 a cleaning job, gross, to which repairs and new furnaces add much good velvet.

Will you try a Super Suction three days, FREE? Write for details of this liberal offer

THE NATIONAL SUPER SERVICE CO.
1944 North 13th Street Toledo, Ohio



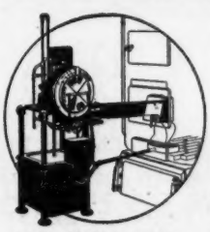
ROUND OAK
Diamond Shaped
Top Radiator

It's different—most efficient

This is just one of the better construction features that makes for Round Oak furnace leadership.

THE BECKWITH CO., Dowagiac, Mich.

Balanced Heat



Listed as Standard by Underwriters

Approved by New York Board of Standards and Appeals

The McIlvaine Method of Oil Heating

With the fidelity of a well-balanced scale, the amount of heat supplied by the McIlvaine Method automatically increases or decreases exactly as the temperature outside demands. Thus, an even temperature is maintained indoors, all winter long. The McIlvaine Continuous Flame Oil Burner (recommended by the leading warm air heating experts) with its five flame sizes, automatically balanced to the heat demand, gives positively satisfactory results, and is highly efficient when installed in warm air and other types of residence heating systems.

WRITE NOW
for dealer's proposition, sales plan and complete information.

McILVAINE BURNER CORPORATION
747 Custer Avenue Dept. A Evanston, Ill.

Has Competition Made the Going Tough?

All the more reason, then, for immediately investigating the new H. & C. No. 110 Register. A prospect just cannot help being impressed with its outstanding attractiveness and all around superiority. You will find that it will frequently give you the edge—and when competition is extremely keen, you can't afford to pass up that advantage.

~

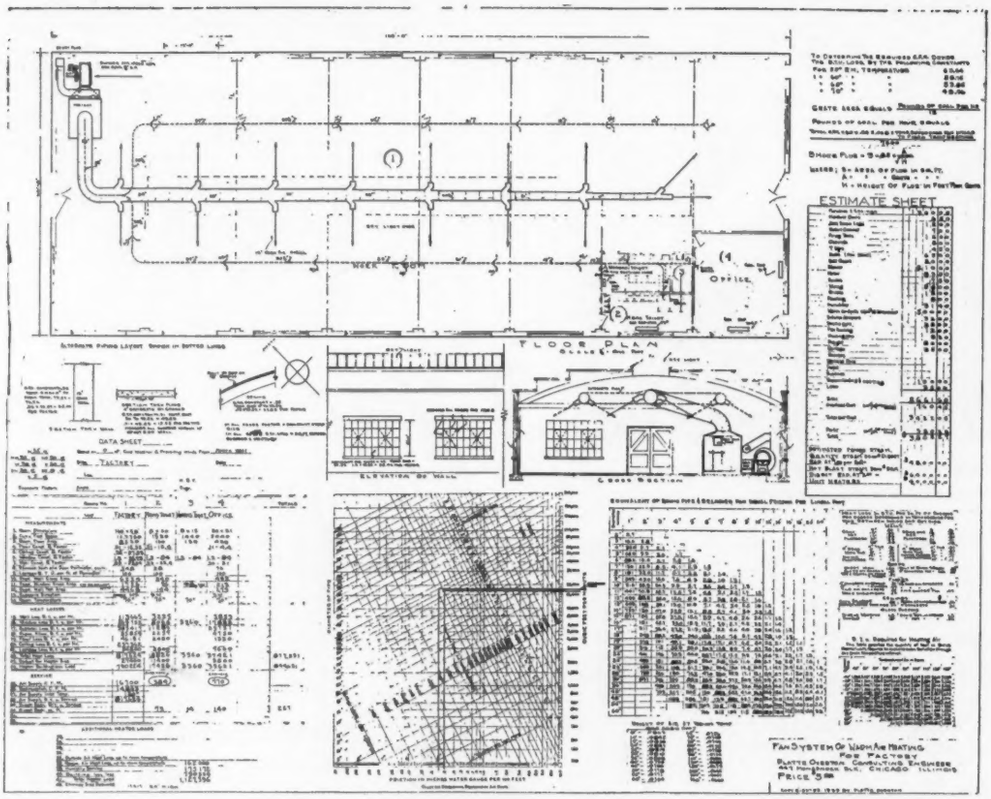
Don't delay—see it at your jobber or write to us for descriptive literature.

Hart & Cooley Mfg. Co.

CHICAGO, 61 W. Kinzie St. NEW YORK, 101 Park Ave.
PHILADELPHIA, 1600 Arch St. BOSTON, 75 Portland St.
NEW BRITAIN, CONN. — NASHUA, N. H.

Factories at Holland, Mich., New Britain, Nashua

ALSO A COMPLETE LINE OF FURNACE REGULATORS, CHAIN, PULLEYS, DAMPERS, ETC.



NOW with this help you can handle the *BIG* heating contracts

IF you are a live progressive warm air heating and sheet metal contractor, and if you have been passing up the Big ***Fan Blast*** Warm Air Heating jobs because you lacked the proper ***engineering*** information to tackle this type of job, here is data that you have been waiting for.

This service, which consists of complete plans and engineering information, won't make you an engineer, but if you know how to read plans, charts, graphs, and tables and know how to figure grate areas, heat losses, pipe sizes, etc., ***when you are shown how with complete data and correct formula,*** you will realize the great value of this information and be able to use it profitably.

The plan illustrated above (greatly reduced in size) is that of a Fan Blast Warm Air Heating installation in a ***factory.*** All the information necessary for you to figure a similar installation for a larger or smaller factory is given right on the full size plan.

Plans, specifications, material and cost estimates, instruction sheets, description of system design, etc., showing installations in ***Church, School, Theatre, Garage*** and ***Residence*** are also available. Each plan is complete with charts, graphs, tables and heat loss data sheet. Methods for sizing ducts, mains and branches are given together with data for determining grate area, smoke flue area, fan and motor requirements.

ENGINEERING PLANS
for
FAN BLAST Warm Air Heating and Ventilating

THESE plans and accompanying data were prepared by a well known Fan Blast Warm Air Heating and Ventilating Engineer. Live contractors who can apply this information can use it to land the big jobs that come up in their community. The Schools, Churches, Factories, etc., in your town should be heated by ***Warm Air*** and these plans open the way for ***you*** to get the business.

Send the coupon for further information

Book Department

AMERICAN ARTISAN

139 N. Clark Street - Chicago, Illinois

+

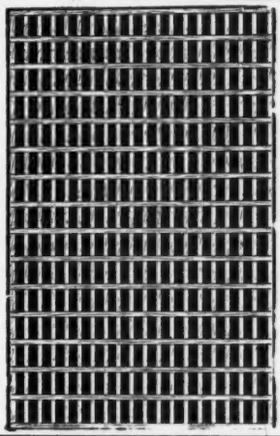
AMERICAN ARTISAN
139 N. Clark St.
Chicago, Ill.

Send me more information and prices of PLANS for ***FAN BLAST WARM AIR HEATING AND VENTILATING.***

Name.....

Address.....

Town.....State.....



AMERICAN WOOD REGISTERS

WHEN you order wood registers be sure of getting the best by buying these famous wood faces—

Known as the finest for over 21 years

They add extra value without extra cost. We make nothing but Wood Registers and only the best.

Write today for catalog and latest price list.

The AMERICAN WOOD REGISTER CO.

Plymouth Indiana

A new furnace paste

FOR BETTER, NEATER AND QUICKER WORK

Non-Cereal—Non-Souring

Asbestos Paper will not absorb it as it does cereal pastes. Paper does not become soggy—not so apt to tear.

Larco Mineral Paste does not turn brown—no stains—mice will not touch it either when moist or dry and it does not gum up the hands.

Larco Paste can be kept on hand mixed ready for use. It has greater covering qualities. It slips easily but adheres permanently.

Order a trial can now—it will not sour—keeps any length of time.

Write for circular which tells all about it—get Larco prices.

WESTERN MINERAL PRODUCTS CO.

OMAHA *(Formerly Larsen-Bennett Co.)* NEBRASKA

only $48 installed

All Electric—plus 4 Exclusive Features

1. Automatically checks furnace in event of electrical current break.
2. Automatically re-engages after fueling.
3. Gradual operation of draft and damper. No banking up of gas or smoke.
4. No weights, electric motor, clock or dry batteries—nothing to oil.

Simple to install. Thousands are in use. Listed as standard by Underwriter's Laboratories.

Dealer Price **$22.75** *f.o.b. Quincy, Ill.*

SHEER COMFORT *heat Regulator*

Ask your jobber or write
H. M. Sheer Co., 213 Hampshire St., Quincy, Illinois

"American Seal"

FURNACE CEMENT

Roof Cement—Stove Putty
Plumbers Putty

PAINTS AND SPECIALTIES

WILLIAM CONNORS PAINT MFG. CO.

Established 1852

TROY NEW YORK

JAMES L. PERKINS, Western Distributor
140 South Dearborn Street, Chicago, Illinois

LAMSON & SESSIONS CO.

CLEVELAND, OHIO

Plants at Cleveland and Kent, Ohio; Chicago and Birmingham

FURNACE POKERS STRAIGHT OR BENT POINT

Plain or Japanned
½"—⅝" and ¾" diameter
Lengths from 3 to 6 foot

DEPT. F

FANNER MANUFACTURING CO.

BROOKSIDE PARK CLEVELAND, OHIO

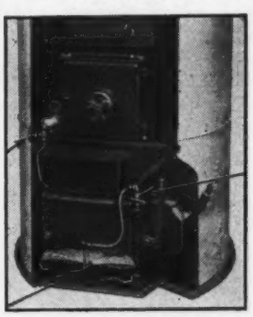
Let's tackle that difficult warm air job together—

NOBODY knows everything and progress comes only by studying conditions.

Perhaps you have a customer who still insists that the warm air installation you or someone else put in is not working right.

If you have failed to find the reason send the plans and all data you have on the job to AMERICAN ARTISAN. The problem and plans will be published and expert warm air heating engineers will offer their solutions.

It settles the dust in the ashpit



FURNACE DUST ELIMINATOR

MAKES removing ashes a clean, easy job and that's why you can make good profits selling it. Every furnace user will appreciate this new Patented feature of your installations.

It means more furnace jobs and pleased customers.

It sprays a fine moisture over the ashes and keeps dust from spreading. Saves grates, adds to furnace efficiency and is easily attached. The sleeve connection allows the nozzle to swing out of the way with door. High grade in all respects.

Write today for full details, circular and prices

DUSTLESS ASH COMPANY

MUSKEGON, MICHIGAN

Founded 1880

American Artisan

THE WARM AIR HEATING AND SHEET METAL JOURNAL

Entered as second class matter, January 29, 1930, at the Post Office at Chicago, Ill., under act of March 3, 1879. Formerly entered on June 25, 1887, as American Artisan and Hardware Record.

Yearly Subscription Price:
United States $2.00
Canada $3.00
Foreign $4.00
Single Copies 25c

Published EVERY OTHER SATURDAY—to Promote Better Warm Air Heating and Sheet Metal Work

Copyright 1930 by

PORTER-SPOFFORD-LANGTRY CORPORATION

139 North Clark Street, Chicago—Telephone Central 7670

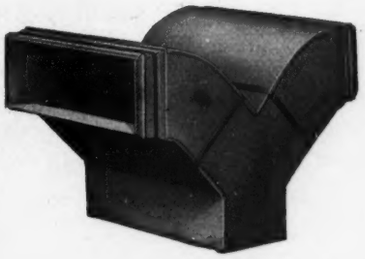
Fred D. Porter, *President* John C. Langtry, *Vice-President* Howard H. Bede, *Secretary*
Editor: Joseph D. Wilder *Business Manager:* Etta Cohn
Circulation Manager: John R. Hannon

Advertising Representatives:
Charles E. Kennedy — J. F. Johnson

New York Office: 295 Madison Avenue, Room 1109, *Tel. Ashland 5342*
Frank G. Cambria, *Eastern Representative*

Vol. 99, No. 16 CHICAGO, August 2, 1930 $2.00 Per Year

Table of Contents



The Difference Between Profit and Loss

on many furnace installation jobs, lies in the labor costs. When you use

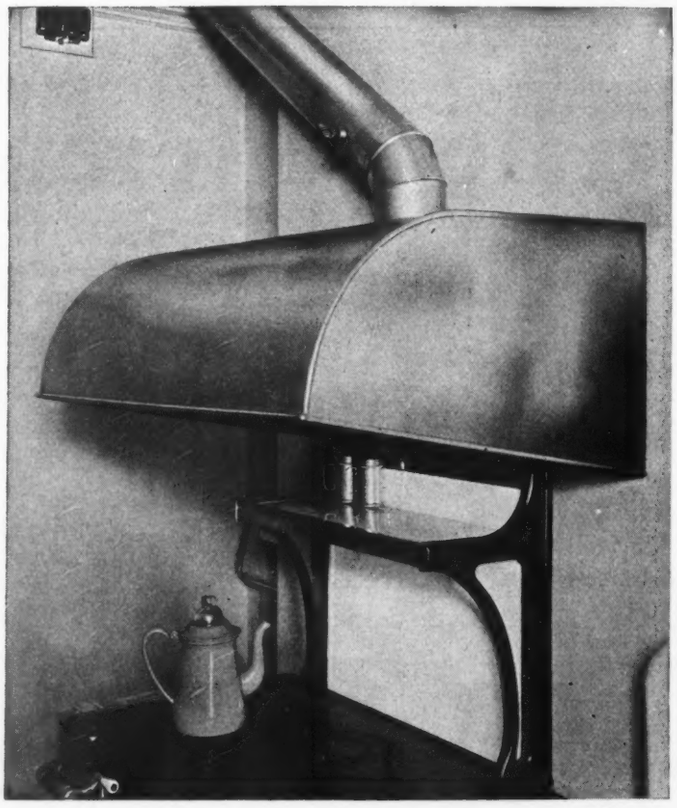
HANDY PIPE

your labor costs go down—because this pipe is made to FIT. Sections snap together quickly and easily; wall stacks grow very rapidly; offsets are readily accommodated. And you have the added satisfaction of knowing that, on that job, you used the pipe that is

"Built To Outlast
The Buildings It Goes Into"

F. MEYER & BRO. CO.

Peoria, Illinois



Monel Metal hood over range in a New York apartment. Fabricated by RUDMAN & SCOFIELD, New York.

Every kitchen needs a RANGE HOOD... *Make them of* MONEL METAL

IF you want to make your customers better acquainted with Monel Metal household equipment—if you want to pave the way to profitable installations of sinks, table tops, laundry chutes, etc.—sell them Monel Metal range hoods and canopies. They're easy to make... and there's no better way to demonstrate the wonderful decorative and practical advantages of this silvery Nickel alloy... A Monel Metal range hood is not only handsome when installed—it retains its crisp, silvery lustre through the years. It will never rust. It resists the corrosive action of fuel fumes, food vapors and cleaning compounds. It is easy to keep bright and shining and it will withstand the hardest kind of service, for Monel Metal is strong as steel with no coating to wear off... Get Monel Metal range hoods into a few of the better class homes in your community... and watch others follow suit. One installation sells another. You cash in steadily on this fast growing business!... And don't forget... Monel Metal national advertising is always working for you—always selling the unequalled advantages of this age-resisting material for the modern home.

MONEL METAL

INCO MONEL METAL

Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

Mention AMERICAN ARTISAN in your reply—Thank you!

American Artisan

THE WARM AIR HEATING AND SHEET METAL JOURNAL

Vol. 99 CHICAGO, AUGUST 2, 1930 No. 16

Let's Take Stock

BUSINESS hasn't been as good as it might be for most of us in the warm air heating industry.

And this let-down has emphasized the fact that there are three distinct groups operating in this heating field.

First there is the man who has accepted conditions and has sat down to wait and grumble until things "pick up."

Second, there is the man who has refused to accept conditions and has put renewed effort into his sales efforts.

Third, there is the man who has not only refused to accept conditions, but has taken time out to *think*.

For the first man there is little hope. When business picks up, as it inevitably will, he will get jobs. But he will go after work and put in jobs just as he did before the slack season.

For the second man there is hope. He is the plugger, the dogged man who will always turn over a volume of business, but he won't do much to advance the industry.

But for the third group, no praise can be too profuse.

There hasn't been a better time in the last twenty years for taking stock of our individual businesses than exists right now. We all have plenty of time to think and plan. We are not rushed with installation, sales, politics, wars, and so forth. And the quieter the shop is the better the opportunity for thinking.

It really doesn't matter whether we are a manufacturer with a large force of employees, a tremendous daily overhead and overstocked warehouse—or whether we are a little dealer with five furnaces on the floor and no salesman, average overhead and the men in the shop gone fishing on their own time.

Let's put down right here a few things to think about.

Let's begin by looking back over the jobs we put in during the last two years. What kind of jobs were they? Just another furnace—or did we try to sell the owner the idea of a modern warm air heating plant?

If most of our jobs were just another furnace, it's about two to one that an oil burner agency came along and sold the owner a burner that cost at least twice what we got for the furnace. Probably some other heating man came along and placed a fan or a blower, automatic humidification, automatic control and made a profit on each item.

We might just as well have taken that profit ourselves had we had a little more intestinal fortitude.

Then let's think about these accessories as they relate to our business. Let's just think for a minute of all the jobs we sold where there wasn't a thing attached to the furnace but the pipes.

If the owner is satisfied with our work, we're in on the ground floor to sell him a whole line of accessories which will make him even more satisfied with warm air heat. Why not put some sales effort these days to calling on these old customers and selling them modern improvements.

And there is the replacement field. Take the jobs we sold ten or more years ago. Do you know any automobile owner who is driving a 10-year-old car? Probably not. Why, then, can't we sell him a new furnace on the pride of owning something up to the minute? It can be done, because dealers all over the country are doing it.

Just jot down these older installations. What kind of a sales argument can be put up that will convince a man he ought to throw out a satisfactory job to put in something new?

Pride and convenience, that's the answer.

The automobile and radio companies are selling new models on the very thinest of improvements. Your old car will probably run 25,000 miles yet. Your old radio may have to be charged, but it will still drag in Los Angeles. Why a new car or a new radio?

Because we all want the latest.

You don't have to answer the question—Is today's furnace better than the one of ten years ago? You all know it is.

But the big point is that since that old job was installed, we have gotten away from "hot air" and we are selling warm air heating. We are now able to sell a system that rivals that used in the finest public buildings. We can sell a type of heating that has the sanction of the very highest authorities on heating in the world. We can sell a system so nearly human that it will take its own fuel, wait patiently until a little

(Continued on page 40)

The Eighth Article On

Cost Accounting

IT is my purpose in this article to present for your consideration the form of statements which are available from the set of books I have been writing about. We have been told that the proof of the pudding is in the eating. I want to tell you that the proof of value of a set of books lies in the ability of that set of books to produce, without undue labor on the part of the bookkeeper, and on reasonably short notice, statements, setting forth in sufficient detail the financial condition of the business, and also a statement showing the operations of that business during the period covered by the report.

These statements, two in number, are the final word in boiled down facts concerning the business. The financial statement is called the Balance Sheet. It shows the Assets and Liabilities of the business, also the proprietor's or separate partner's interest in the business. To state it more plainly—it shows you where your money is at the given date. It shows you the amount of your indebtedness, and the several kinds —Notes and Accounts Payable, etc. It also shows that your capital has increased or decreased, depending upon the fact that your profit earned was greater or less than the amount you personally drew out of the business for your personal uses. The operating statement speaks for itself. If the books are properly designed and well kept, it will tell you those things which happened in your shop during the period. It will tell you how much, if any, money you made, and how.

A few contractors have said that the plan of cost records I have been writing about is too complicated for a sheet metal shop. I don't like that charge, for I do not believe it is warranted by the facts. Books are complicated only when we want an excuse *not* to keep good records, or when we refuse to admit that we are too old-fashioned to bring our business up-to-date. Let me say for the benefit of

Joseph G. Dingle, C. P. A.

those who have felt that my ideas are too complicated for a sheet metal shop that I have just recently installed a set of accounts in a shop—not a large one, either, and the young lady in that office has had very little difficulty in getting acquainted with the routine of the bookkeeping, the amount of work involved is but little more than she did before, in keeping up only with the amounts due the shop by the customers. It is my firm opinion that after the close of the second month of operation of those books, she will be able to prepare and submit, with all necessary explanations, balance sheet and operating statement for the proprietor's information and guidance.

Bookkeeping, where there is a final answer, or a goal to be reached, becomes a pleasure rather than a chore, and it has been my experience that the preparing of operating statements provides the necessary incentive for prompt handling of all matters pertaining to the books. They are always up to the minute, and at the close of the month that bookkeeper wants to get her trial balance as soon as possible, in order that she may prepare for the boss the operating statement which will show how much money was made or lost during the month just ended.

Don't throw aside the matter of better cost records with the statement that the system is too complicated. You are the complicated matter—not the books. You who are the critics do not have first class records and are unwilling to put yourselves to the trouble to learn more about the most important part of your business—the financial end. You will, if you continue that attitude, follow the line of least resistance, and like those before you on that trail, you will fall by the wayside and be forgotten.

The AMERICAN ARTISAN, in presenting this series of articles, has in mind the rendering of a service to you—helping you to improve your own business, your own industry and the business community at large. There are, of course, readers of all kinds—those who read trade journals for the purpose of learning the new things which are constantly coming up in their particular field of endeavor; those who take a trade

journal because a high-powered salesman sold them the subscription; those who like particular cartoons which appear in some journals, and for a thousand and one other reasons.

In writing for the ARTISAN I have felt that I had an opportunity to speak directly to the livest, more awake, sheet metal contractors in the United States, and have addressed myself to that group with the feeling that I might be able in a small way to add to their general knowledge of the rules of the business world, and thereby assist them in becoming better and more prosperous merchants.

Let's review, briefly, the reasons why you should have a first class cost record in your shop. You will recall that all through this series I have been trying to drive home to you in simple language those points that are so easily and so often overlooked in the rush of getting your work done. I know how you feel about the office—no money made there. You are but little different from other business men on that point, until they awoke to the fact that they were wrong. I want to give you briefly a few points to remember:

1. Your money is tied up in your business and you had better watch it. It is not all in the bank, where you can lay your hands on it at a moment's notice. It is scattered all over your shop—in materials, supplies and expenses. It is all over town, in accounts receivable, tools, delivery equipments, etc.

2. Your money is constantly changing form. Unless you can recognize these changes as they occur and record them you are quite likely to lose sight of quite a few of your dollars.

This reminds me of the story of the little boy who was continuously getting a $10 bill changed into small change, then taking the small change to the bank and getting another bill. When asked why he did it, he remarked, "Somebody's going to make a mistake and it won't be me."

3. You are in business to make money. How? By putting together material, labor and expenses in such a form as will meet the demands of your customers, and then collecting from your customers the cost of these three elements, plus a profit. Then, if you are to make money in your business, you must *know* what the cost of the Material, the Labor and the Expense is in order that you may be sure you get that cost from the customer, along with the profit.

4. You must realize that one law of the many we have is constantly affecting your business. You may violate the Prohibition Act and get by with it. You may violate almost any of the man-made laws and not pay the penalty. The Law of Averages, however, is one law that has made itself felt in practically every business. You may not realize that this LAW OF AVERAGES affects your business—but it does. Every time you build up an estimate, you assume that because a certain workman did a certain piece of work in a given time that he can do the same thing again in perhaps a little less time. You are thereby applying the law of averages. This law of averages, however, is not available to you and your business from some outside source. You can write to your congressman and get a copy of the Prohibition Act without cost to you. You can go to your attorney and, for a reasonable fee, obtain from him a full opinion of any given act of congress or the state legislatures. But the only source of information concerning the Law of Averages as it applies to your own business is in your own office.

Suppose you say that you can obtain from certain sources pertinent data pertaining to the Sheet Metal Contractors of the State of Illinois or of the country at large. You would be right in that you could obtain some such information relating to the sheet metal industry, but just because that information conveys facts concerning operations of the shops of some of your fellow sheet metal workers is no proof that those conditions apply to your own business. To know intimately the workings of your own business for the past several years puts you in a position to predict the future intelligently.

Now, I want to present in skeleton form the two statements which are intended to provide the proof of the value of the set of books we have been writing about. The Balance Sheet and the Operating Statement—each to be prepared from the books at the close of each month, by the bookkeeper—for the general information and guidance of the proprietor.

THE BALANCE SHEET

ASSETS—(You Own)	LIABILITIES (You Owe)
Cash in Office	Accounts Payable
Cash in Bank	Notes Payable
Accounts Receivable	Accrued Pay Roll
Notes Receivable	Reserve for Depreciation
Materials—Inventory	
Supplies—Inventory	NET WORTH (Your capital and profits)
Work in Progress	Your original Capital Contribution
Machinery and Equipment	Your profits allowed to remain in business
Office Furnace and Fixtures	Your Profit to date this year
Delivery Equipment	
Your Drawing Account	

Under assets, you will note we have provided the names of the ledger accounts which will be necessary to record the property of various kinds you OWN. Each of these asset accounts will, at the close of each month, be shown on a statement, with the amount of money you have in each. The total of all of these accounts will be the total value of the property owned by your business.

Under Liabilities, you will note we have provided the names of the ledger accounts which will contain the information relative to the amounts you owe to others. These accounts will, at the close of each month, contain in definite and proven figures, the amount you owe on accounts payable, on notes to the bank and otherwise, etc., and the total will record the amount your business owes.

Under Net Worth will be found your capital account, your surplus account and the profit to date of the statement. If the balance sheet were made at July 31, the profit from January 1 to July 31 would appear in the account "Profit to date." The Assets minus the Liabilities leaves the amount of money in your business belonging to you. This sum will also be the amount of your original contribution of capital, plus the earnings of the business from its beginning, and minus the amounts you have withdrawn from the business for your personal and family use.

The balance sheet, then, shows you where your money is, and how much of the other fellow's money is along with yours. It is a statement of your business resources and liabilities. It is the one statement the banker is interested in when you go to the bank for a loan. He wants to know what you have and who you owe. He also wants to know if you are making more than you are spending, or, as so often happens, *spending more than you are making.* He wants to know these facts in order to judge your responsibilty for a loan. He wants to lend you money if you are a good business man and will, in all probability, pay it back within a reasonable time, with interest.

How about yourself? Your business represents, probably, all you have. Should you not be interested in your own financial condition in order that you may plan to increase your net worth rather than to consume what little you have? You should be interested in knowing that you are at least making as much from your business as you are withdrawing for your personal and family use. Unless you are making as much as you are spending, it is but a short time until you will be forced to close your business and seek other means of earning your living. The question of your financial condition is of far greater importance to you than to your banker. It is your ALL, and, at best, your banker will lend you but a small percentage of what you own.

In the Sixth Article, we took up each account shown in the above Operating Statement and explained its use and purpose. If you will refer to that article, you will find that the Operating Statement covers quite in detail and accurately the actual operations of your business.

(Continued on page 33)

THE OPERATING STATEMENT

	Sales	Cost of Sales	Gross Profit	Per Cent
Material	$.....	$.....	$.....	.....
Labor	.....	.....	.....	.....
Total Sales	$.....			.....
Total Cost of Sales		$.....		.....
Total Gross Profit			$.....	.....
Overhead Expenses		$.....		
Advertising		.....		
Bad Debts		.....		
Collection Expense		.....		
Dues and Subscriptions		.....		
Discount Allowed		.....		
Delivery Expense		.....		
Depreciation		.....		
Freight and Drayage		.....		
Heat, Light and Water		.....		
Gas and Oil		.....		
Interest Paid		.....		
Insurance		.....		
Indirect Labor		.....		
Machine and Tool Expense		.....		
Office Expense		.....		
Rent		.....		
Repairs		.....		
Returns and Allowances		.....		
Selling Expenses		.....		
Taxes		.....		
Telephone and Telegraph		.....		
Traveling Expenses		.....		
TOTAL EXPENSES			$.....	.....
Net Operating Profit			$.....	.....
Add: Other Income				
Discount Taken		$.....		
Interest Earned		.....		
Total Other Income			$.....	.....
Final Net Profit for Month			$.....	.....
Profit to Close of Prior Month			$.....	.....
Profit to Date for Year			$.....	.....

Air Conditioning

APPLICATION

By
MARGARET INGELS, M.E.
Carrier-Lyle Corp., Newark, N. J.

In the July 19 issue, Miss Ingels discussed the relation of air conditioning to human comfort. In this issue she relates what industry has found out about the advantages of conditioned air on health, activity and comfort

CONTROLLING the physical properties of air, that is, producing cleaned air at a specified temperature, relative humidity and motion, is known as "air conditioning."

The first application of this science was made in industry. Manufacturers had learned that their production depended very much on outdoor weather, so welcomed the installation of air conditioning equipment to provide continuously the desired weather conditions indoors.

The kind of weather produced indoors depends on the product manufactured, but an interesting "by-product" was soon noticed due to maintaining cleaned air of uniform temperature, humidity and motion. This "by-product" was the improved health record, the increased efficiency, and satisfaction which comes with greater comfort of the workers, in factories with conditioned air. The fact was so decided that cleaned air is now provided for office buildings so that clerical workers and executives can benefit by the new science.

It is a short step from industrial application of air conditioning to the application where human comfort is the primary consideration. So theatres accepted the new science and now have full houses during the hot summer by simply making people comfortable. Department stores followed and now prevent the summer slumps in sales by providing spiring weather the year around for their customers.

We know that some outdoor weather makes us enjoy living, and that some is depressing and enervating. We also know that it is not only possible to make any kind of weather indoors, but that it is being done in all types of buildings, and in all kinds of industries. We also know, but seldom fully appreciate, that although we work in conditioned air, are entertained in conditioned air, and shop in conditioned air, we live in our homes in air which is in winter much too dry for health and comfort, in summer too humid for comfort, is usually too warm, and almost sure to be dirty.

Margaret Ingels, M. E.

The American home in which beauty and convenience have always been the primary idea, can now include another and most important consideration, and that is, made-to-order-weather so that the air in which we live is cleaned and has the temperature, humidity and motion which provides comfort and is conducive to health.

What happens in homes that do not make their own weather?

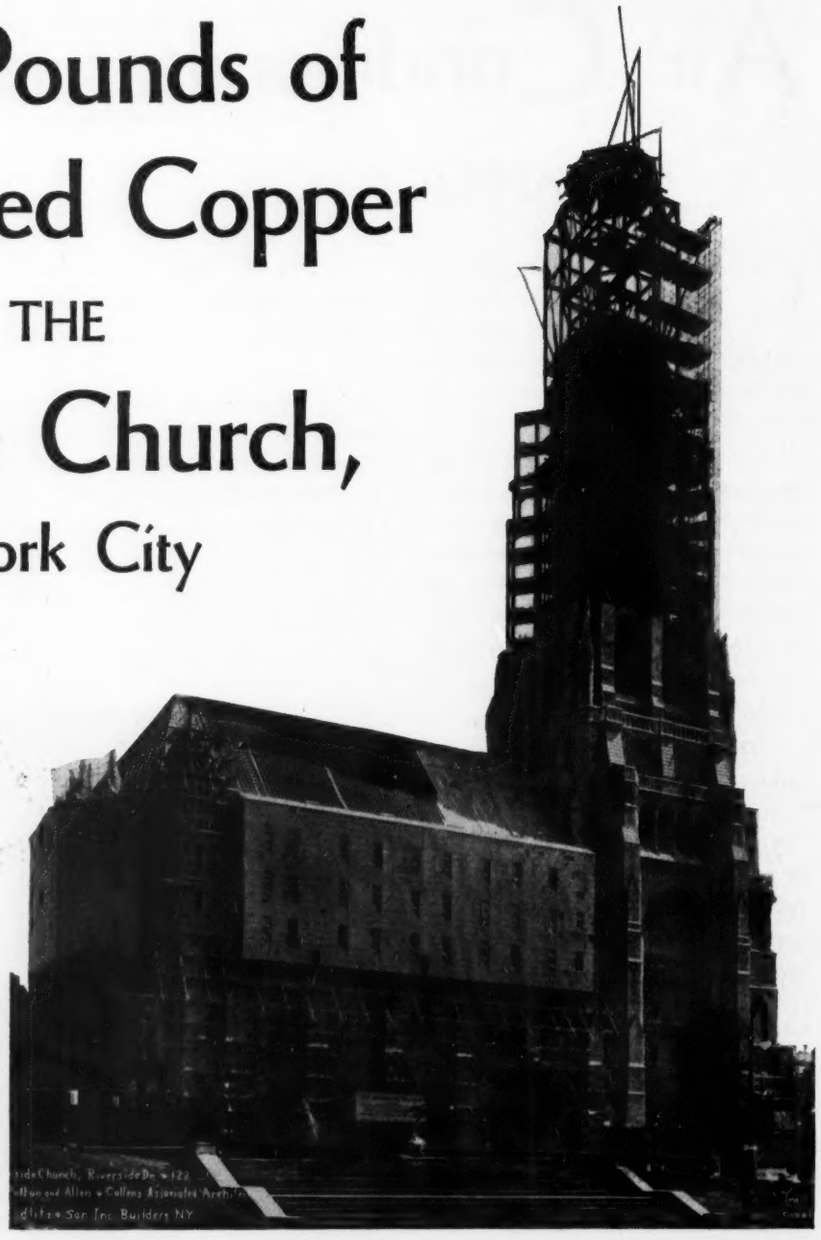
A home that provides heat only during the winter months has very dry air and this dry air has many detrimental effects. Health, personal appearance and home furnishings are all effected. Dry air evaporates the secretions from the mucous membrane of the respiratory tract and undermines our resistance to respiratory illnesses. Dry air causes the "weathered" complexions of American women that contrast so unfavorably with those of English and Irish women. Dry air causes warped panelling, squeaky floors and loosely fitting doors and windows. Threads in fabrics dry out, become brittle and break off so that upholstering, curtains and carpets show wear more quickly.

Dry air is dusty air because it takes moisture to settle out dust. When air contains dusts, it increases the hazard of infections because germs ride around on the particles as on minute aeroplanes. Of course, dusty air complicates the responsibility of the homemaker who wants an immaculate home.

The home where the weather is not made to order, is at a decided disadvantage in comparison to the home that provides cleaned air at the desired temperature, humidity and motion to give health and comfort all seasons of the year.

50,000 Pounds of Lead-Coated Copper ON THE Riverside Church, New York City

And 10,000 Pounds of Copper Are Buried in the Masonry for Waterproofing the Fine Stone Work



Fifty thousand pounds of copper were used to roof and waterproof the Riverside Church. More than 10,000 tons are buried in the parapets, buttress caps, water table and exposed masonry. The roof is batten type lead-coated copper

ON October 10, 1930, the Riverside Church, 122nd Street and Riverside Drive, New York City, will be opened for its first service.

Those of you who have been in New York City any time during the last three years will recognize this church as the beautiful and huge structure standing on Riverside Drive just across from Grant's tomb.

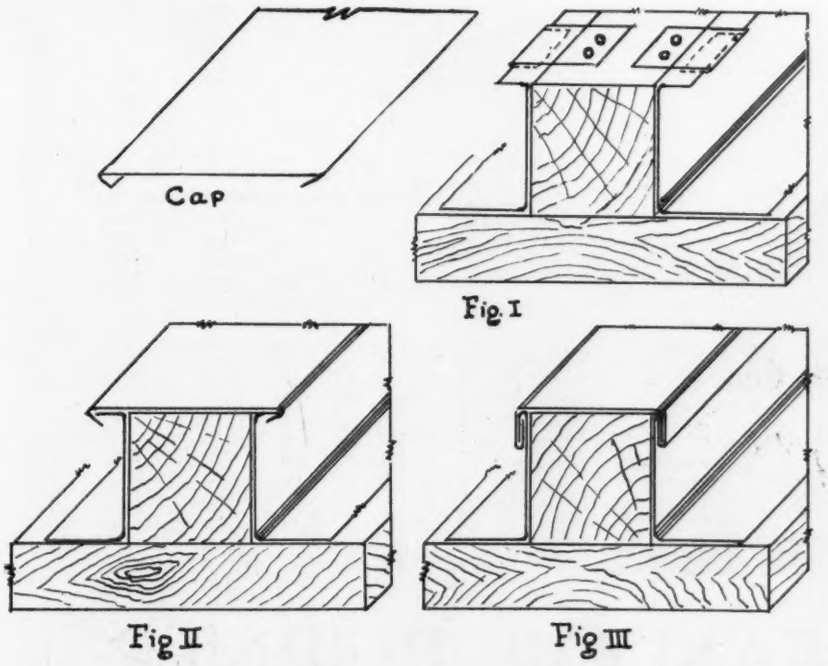
Most of us will remember the great fire which destroyed the scaffolding of the church and held up construction for more than a year. This spectacular fire was shown all over the country in the news reels, for the fire was high above street level and before it was brought under control destroyed weeks of work and thousands of dollars worth of materials.

The church itself is a great stone edifice occupying nearly a block frontage along the drive and towering several hundred feet into the air. In beauty and structure it rivals any of the great cathedrals of Europe, but it was built in record time for so large a building.

The building is of stone, with a high tower of ornate design. The walls are all buttressed and ornamented and it is to protect this intricate and expensive stone work that many hundreds of pounds of copper and many weeks of the most skillful artisanship in metal work were spent. This in addition to the great copper sheathed roof on the nave.

The sheet metal contractor on this building is Nicholson and Galloway, 644 Hudson Street, New York City. This firm is one of the best known sheet metal contractors in metropolitan New York and have done the metal work on a large number of the largest buildings in the city.

In addition to their sheet metal activities this firm also has per-



These figures show the type of sheet and cap used on the roof. Expansion is provided for by breaking the sheets ⅛ inch short of full width between battens

fected a waterproofing process for treating the exterior of buildings which are letting moisture through.

One of the most interesting features of the building is, as we said, the extensive use of copper buried in the stonework. The lowest level of this work is the water table just above the ground level. Although the wall is thick at this point the copper sheet is carried completely through the wall from outside to inside. The purpose of this course is, of course, to break any capillary action of ground water working up through the interstices of the stone work.

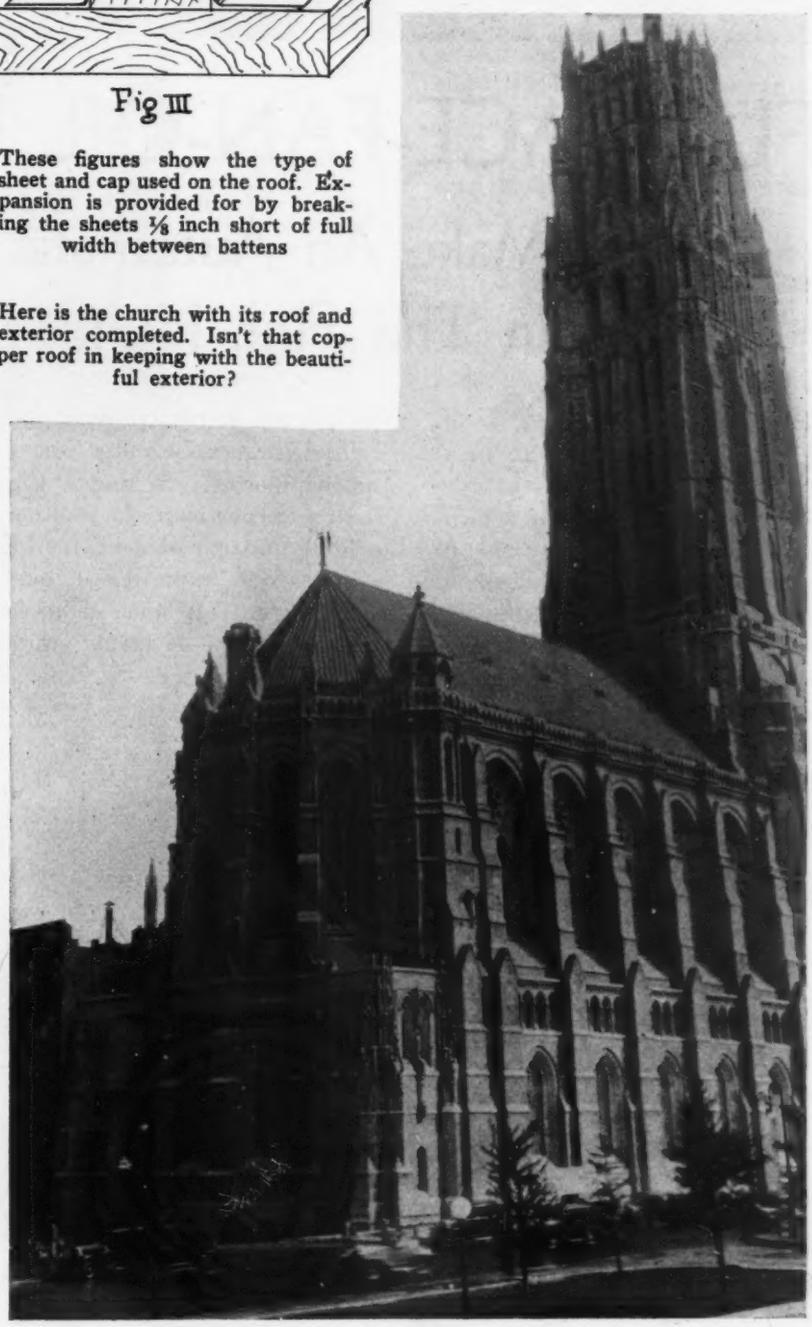
This buried copper is also used under the parapets, buttress caps and belt courses. The buttress courses are particularly exposed and in order to insure against moisture penetration into these important masonry sections each cap is underlaid with a sheet of copper. This sheet does not show from the outside of the stone work, being covered in the joint with mortar, but the sheet runs under all the stone caps.

The parapets are likewise protected from water penetration by copper. The use of copper here eliminated the danger of the moisture working under the capping of the stone. In cold weather such water expands and sets up a spalling action which in time destroys the parapet. If left unprotected long enough this expanding action of water in freezing will destroy most of the parapet stone work. Even in summer this trapped moisture works to destroy the stone and mortar of a building and is responsible for much of the replacement work done on many of our finest buildings.

The copper used in this protec-

(Continued on page 33)

Here is the church with its roof and exterior completed. Isn't that copper roof in keeping with the beautiful exterior?



Dr. Erehart's house stands in a cup in the hills, but is exposed to every winter wind that blows. While the construction is brick veneer the large window area makes infiltration high

FURNACE-FAN-OIL BURNER

Make An Automatic Heating System In This Fine Huntington, Ind., Home

ONE very noticeable development in warm air heating this past few months is the evident favor which owners of fine homes display toward warm air as a heating medium. This trend has been especially favored by those home owners who are installing automatic heating through the use of oil, gas, or stoker equipment.

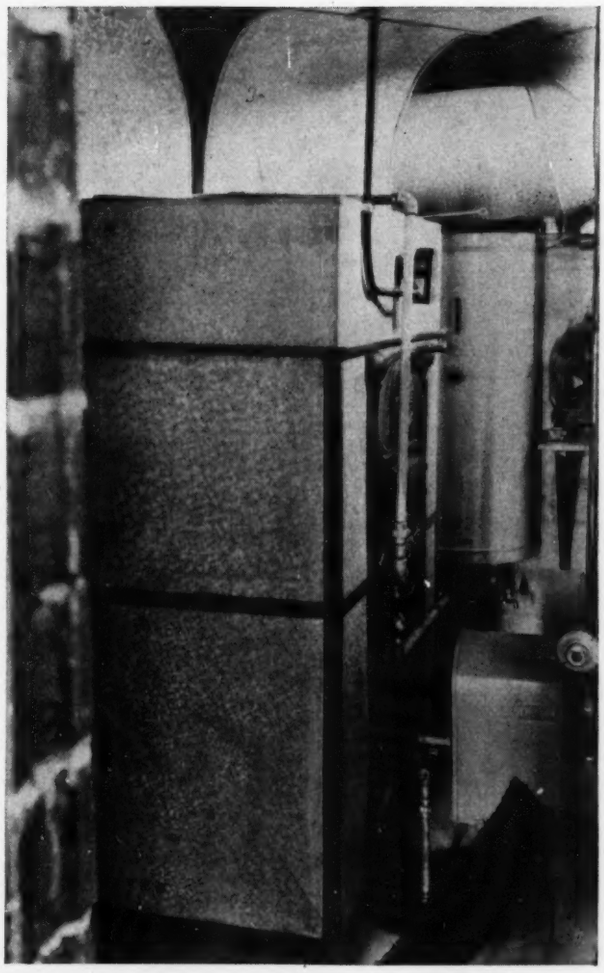
Much of this favor can be ascribed to the efforts of specialized heating men who are going after this particular class of work just as aggressively as possible.

It is also to be noted that in those cities where our manufacturers are located, their installation departments have found this field especially easy to sell on the advantage of high class heating plants.

An excellent example of this is the home of Dr. M. G. Erehart in Huntington, Indiana, the home town of the Majestic Furnace Company.

The background features of this job are worth relating. Dr. Erehart is a dentist and a former Indiana football star and a Big Ten conference man. In addition to his profession of dentistry he is intensively interested in outdoor sports. This home of his is the culmination of many years' desire for a home some distance from the edge of Huntington. The house itself lies quite a way back from a paved road in a cup in hills which rise rapidly up on three sides of the house. Down this valley a small stream wanders and is being dammed and

The living room is wood paneled and has large French doors on two sides. Warm air is introduced from the two side walls. The return air grilles are in the inside corners



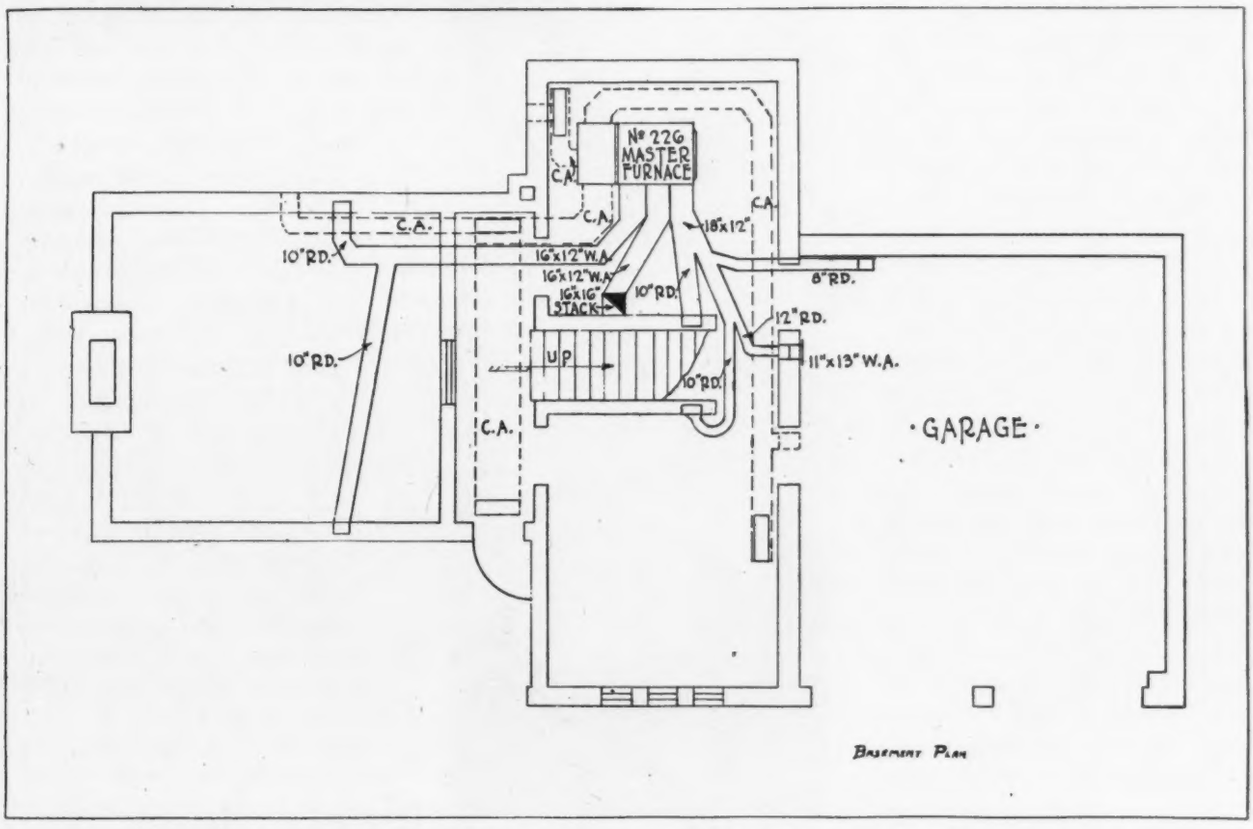
This is the heating plant. The furnace is a Majestic. The oil burner is a Williams. All the ducts are rectangular and are placed against the first floor joists. The square casing allowed the furnace room to be "tailored" to the furnace

stocked with fish by the doctor. At the back of the house a quail and wild bird feeding place was maintained all last winter. The doctor is a dog lover and has a sizeable kennel in the rear of the place.

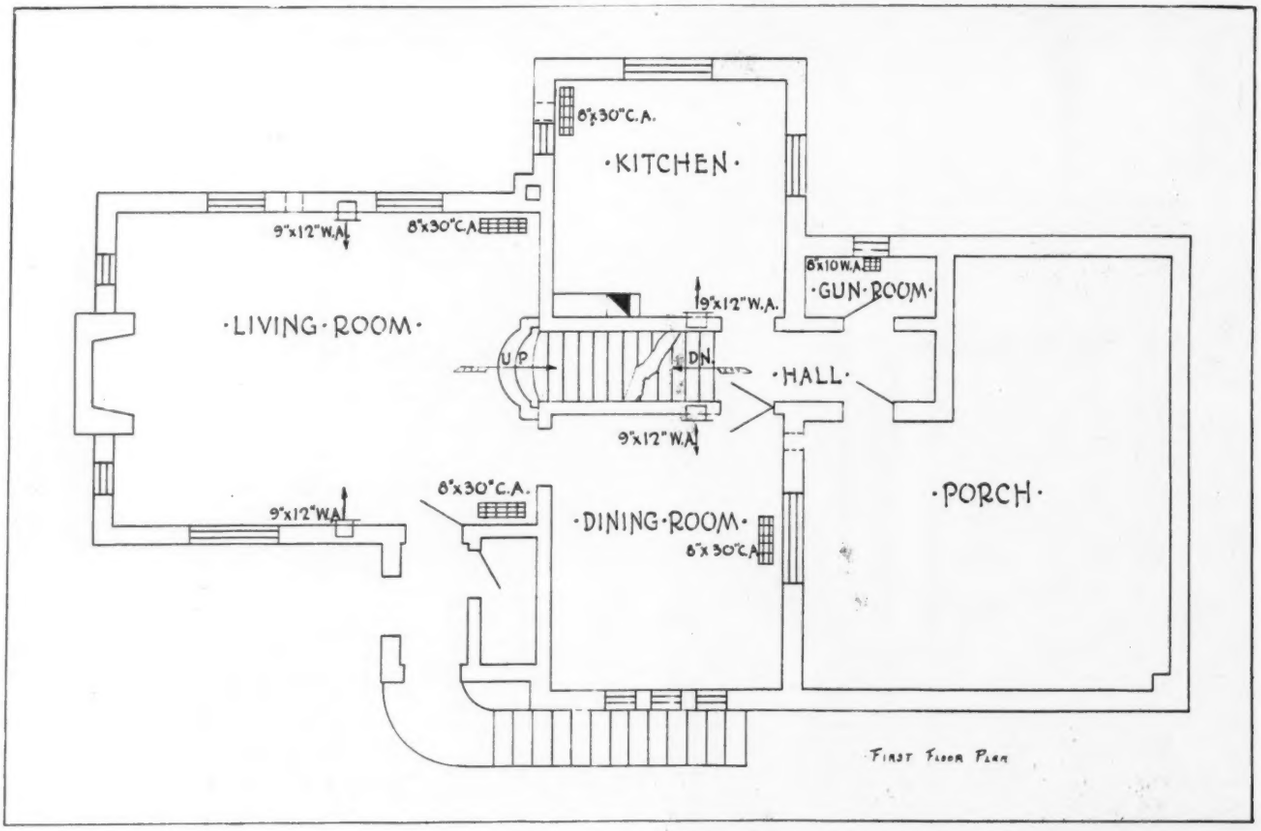
From these facts it can readily be imagined that the doctor gave considerable thought to comfortable and healthful heating—especially in his new home.

This desire for the most healthful heating system led the doctor to a consideration of warm air heating. He made careful investigation into the merits of this type of heat and also made a survey of the possible fuels to use to get automatic heating.

The result of this investigation was the purchase of a warm air furnace, equipped with an oil burner and a fan. The warm air is all conveyed through flat ducts. On the second floor the ducts are in the attic and exhaust through ceiling registers. The system was designed to oc-



The heating layout of the basement. Note the few trunk ducts and the general compactness of the system

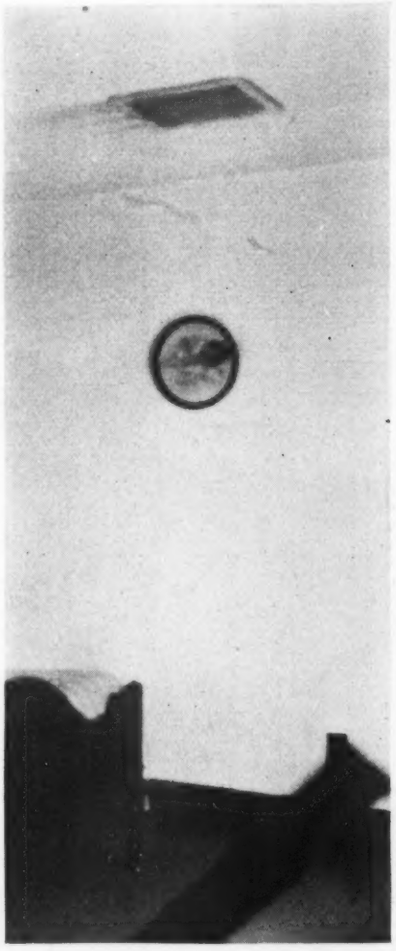


The first floor layout. The second floor is heated from one large stack which branches across the attic floor exhausting through ceiling registers

cupy as little space as possible and was for that reason placed inside a small room, out of the way.

The automatic feature was gained through using a Williams Oil-O-Matic oil burner controlled from a room thermostat. The fan is controlled by a bonnet thermostat which cuts the fan in and out as the burner raises the temperature and the house cools the furnace off.

The system was designed with several points in view. First the doctor insisted that the heating plant have a heating capacity sufficient to take care of a temperature rise from —10 degrees to +70 degrees. This increased the customary temperature differential considerably and accounts for the large capacities figured into the plant. In addition, the living room is open on three sides and is lighted by large floor to ceiling French doors on all sides. These have a high infiltration value, so the living room required more than usual heat.



One of the ceiling registers

Inasmuch as the house is very much exposed and designed to have a high light value and also a high filtration value, the heating system had to be carefully designed. The heat loss factor was given careful attention.

In checking over the data sheet shown here, the heat losses for the various rooms are noted in columns wherein are shown glass area, exposed wall, cold ceiling, cold floor and cubic contents.

After finding the figure to be used on each of these dimensions the heat losses were figured in B. T. U.'s. For example, room No. 1, which is the living room, of this residence: the glass area is multiplied by the coefficient 1.1 being the heat loss per square foot per hour per degree difference between outside and inside temperature.

Since the owner wanted a guarantee of 70° at 10° below zero the glass area 104 square ft. times 1.1 times 80° equal 9120

B. T. U. loss per hour for the glass of this room.

The coefficient of .24 is used for wall, .43 for ceiling, .29 for floor and .02 for cubics or infiltration. For rooms of extreme exposure 10% is added for safety, making a total heat loss for the living room of 20,416 B. T. U. per hour.

In determining the pipe area dimensions were held pretty close to gravity size, though a fan was used on the job. For gravity pipe size, in the first floor runs the B. T. U.'s were divided by 114, which is the amount of B. T. U.'s possible for one square inch of pipe area to conduct.

The gravity pipe size for this living room should be 179 square inches, but 156 square inches were used, assuming the fan in operation would more than increase the velocity to offset this smaller pipe area.

All the other rooms are figured out in like manner only the factor of 140 used as a divisor for second floor rooms.

From such calculations the sizes of the ducts required to heat each room were figured. The living room is heated from two warm air registers originating from the same main duct. This duct does not have any other branches coming off it. The warm air is introduced on two sides along the outside walls. This is possible by using a fan. The cold return air is taken out through two floor grilles located in the inside corners of the room. These are both connected into one flat duct which connects into a second floor return air duct near the furnace. The sizes of these ducts and the grilles and registers are given on the plan.

Data Sheet for Figuring Majestic Warm Air Heating Systems. *THE MAJESTIC CO., Huntington, Ind.*

Dealer FACTORY Address ____ Contractor ____
Owner DR. M. G. EREHART Address HUNTINGTON - IND
Location of Building WEST PARK DRIVE & RANGE LINE RD. Old or New NEW
What Is Building Used For RESIDENCE Construction BRICK VENEER
Figured By RTL Date ____ Job No. ____ Furnace Specified 226 UNIT

CEILING HEIGHTS— BASEMENT ____ 1st FLOOR ____ 2nd FLOOR ____ 3d FLOOR ____ 4th FLOOR ____

ROOM	NO.	Glass sq. ft.	Wall sq. ft.	Ceiling sq. ft.	Floor sq. ft.	Cubical Contents	HEAT LOSSES IN B. T. U.'s OR INCHES ft .24 .43 .29 .02 10%	Add for Unusual Exposure	TOTAL Required CFM	Pipe Area REQ	Pipe Size Used
LIVING	1	104	376			2816	9120 7200 2240 1856		20416 170	156 82	2-10
DINING	2	61	211			1344	5360 4000 1040		10400 87	78 42	1-10
KITCHEN	3	36	156			1152	3120 2960 880		6960 58	50 24	1-8
GUN	4	10	70	24		192	880 1280 800 6555 150 297		3272 27	59 13	1-8
GARAGE	5	128	176	418	418	2926 350	770 2310 9845 1595		21175 177	113 94	1-12
OWNERS	6	63	304	256		1920	5520 5760 8800 1520 2160		23760 198	113 94	1-12
GUEST	7	44	129	121		907	3840 2400 4160 720		11120 93	63 40	1-9
MAID	8	26	169	108		810	2240 3200 3680 640 976		10736 90	63 40	1-9
BATH	9	6	32	50		375	480 560 1600 240		2880 24	50 12	1-8
						12442				445	

TOTALS

COLD AIR RETURNS

ROOM	NO.	PIPE SIZE	AREA
LIVING		18	254
DINING		18	254
KITCHEN		14	154
TOTAL			662

DATA FOR FAN INSTALLATIONS

Inside or Outside Air INSIDE
Air Change Per Hour 4
Velocity Thru Ducts 250-1st 300-2nd
Room Temperature Desired 70
Temp. of Air at Room Inlet ____
Temp. of Air at Room Outlet ____
No. of Fan 1000 LS. Make MILES

This data sheet is arranged to be used in figuring either by Standard Code or B. T. U. method. See Majestic dealers' manual for full information regarding factors and coefficients to be used in computing heat losses.

REMARKS FURNACE — 26" DOWN DRAFT - 397 SQ. IN. - G.A.
FAN — 830 C.F.M. REQUIRED - FAN CAPACITY - 1600 C.F.M.

This is the data sheet of the job. The coefficients are noted at the top of each column. This is very close to standard code for gravity even though a fan was used. The system may not be quite as economical as it could be but—it heats

The dining room and garage and the sun room, which is only a half story up, are heated off a second warm air duct. This duct begins as a 18 by 12-inch duct with the branches for the various rooms taken off as needed.

The dining room warm air register is located along the inside wall. The return air duct is a floor grille located under a French door opening onto a porch which is the roof of the garage. The same warm air duct carries warm air to the kitchen exhausting through a wall register on the inside wall. The return air grille for the kitchen is located in an outside corner where it is out of the way. The small lead for the gun room also comes off this warm air duct, but no return air is provided for this small room.

The second floor system is simple indeed. One large 16 by 12-inch duct takes warm air to a stack which is 16 by 16 inches in size. This stack goes up through a partition along the stairs where it is out of the way. The stack goes clear through to the attic where it is divided into branch ducts which run along the joists and exhaust through ceiling registers located approximately in the center of the bedrooms. One of these ceiling registers is shown in one of the illustrations.

It is interesting to note here that through most of last winter's severe weather these ceiling registers were kept closed. The engineers and the owner say that the heat in the ducts in the attic, coupled with a very warm downstairs served to keep the bedrooms comfortably warm most of the time. In cases of need the registers were opened until the rooms reached the desired temperature and the registers were then closed.

The heating plant itself is a very compact unit, closed off from the basement. The furnace

(Continued on page 43)

FAN FUNDAMENTALS [Part III]

With Particular Reference to the Use of Fans in Heating

By **G. A. VOORHEES**
Heating and Ventilating Engineer, Indianapolis, Ind.

Part I of this series was published July 5. Part II was published July 19. In this article Mr. Voorhees explains some of the reasons why a gravity system does not always work as expected when a fan is hooked onto the heating plant.

G. A. Voorhees

Pressure-Type Fans

Whatever its detailed construction may be, the distinguishing mark of the true pressure-type fan is any arrangement which positively prevents air flow from the discharge or pressure side to the intake or suction side of the fan.

Consequently *all* air that passes through the fan is *forced* on through the system—there's no other path for it to follow.

While the fan cost and usually the labor cost of installing are higher than for the booster fan, it has the distinct and important advantage—if properly designed and built—of being *positive* in action.

Fans of this type in residences and other buildings of moderate size, give the heating plant the advantages recognized and listed by the American Society of Heating and Ventilating Engineers in the 1930 edition of the Heating Engineers Guide.

Advantages of Furnace-Fan Systems Using Pressure-Type Fans

"1. The registers may be placed in outside walls or under windows, contrary to practice in gravity work.

"2. The heater location need not be central and its location may be determined by proximity to the chimney.

"3. Pipes may be of small size and need not be given a slope to aid the flow.

"4. Cold air returns may be placed with a view to securing the most advantageous collection of return air without sacrificing efficiency.

"5. Remote rooms may be heated satisfactorily because the system provides a positive delivery of conditioned air to each room.

"6. All air may be filtered to remove dust.

"7. The fan may be used to circulate air in the summer."

Not a Standard Code Violation

Some heating men have objected to statements like the above, contending that the use of small pipes, placing warm air registers in outside walls, etc., are violations of the Standard Code.

This is a mistaken attitude. The Standard Code applies specifically to gravity-circulating systems, whereas the above listed advantages apply to fan systems using pressure-type fans. The Society of Heating and Ventilating Engineers has officially approved and adopted the Standard Code for *gravity* heating.

But the design of a straight furnace-fan system is beyond the present scope of the Code. There are definite engineering formulas and rules governing the design of fan systems in general which have been recognized as "standard" for years

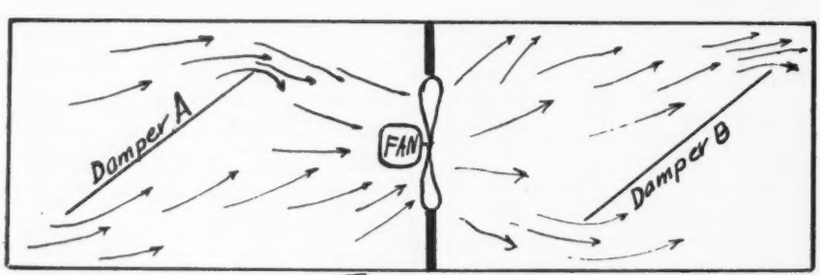
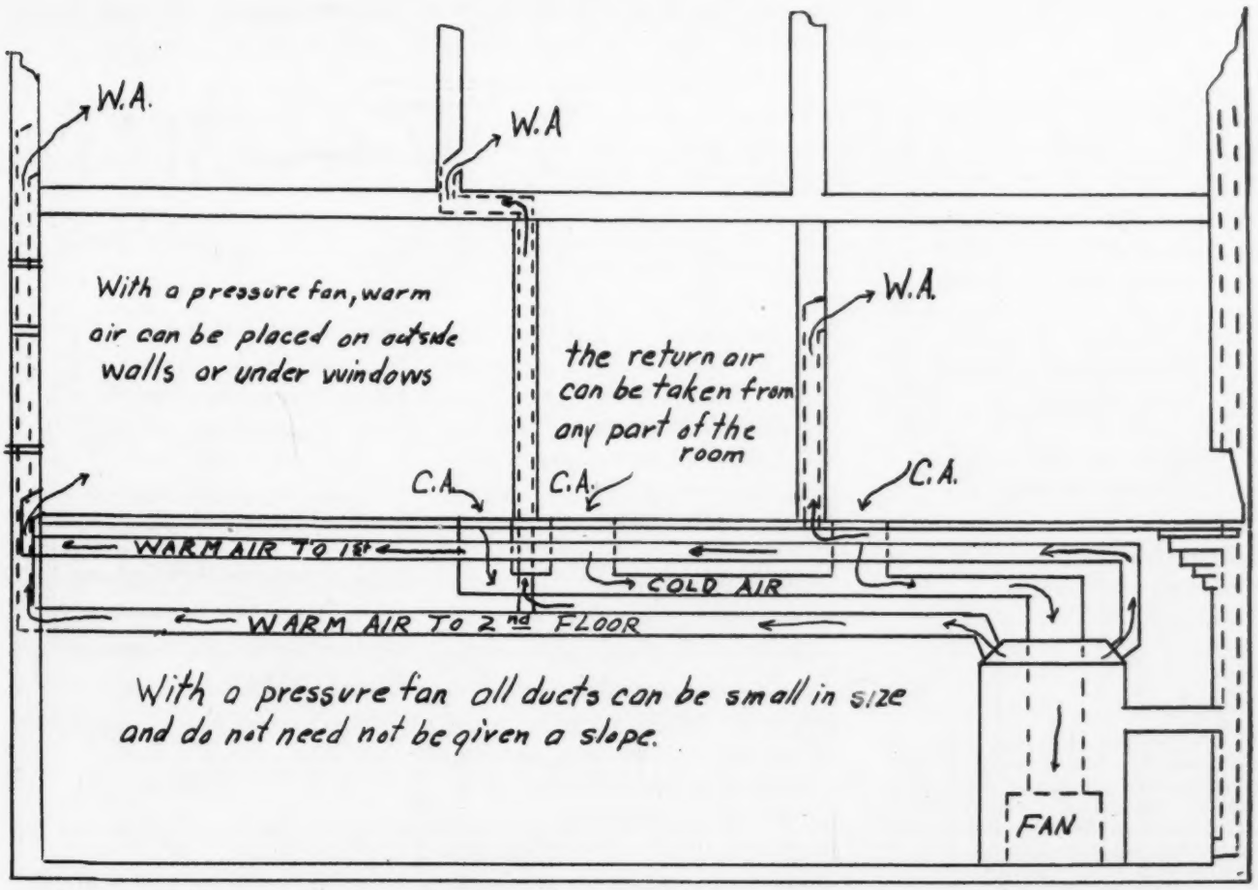


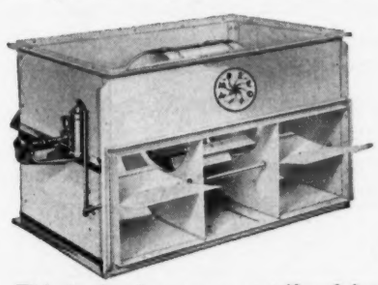
Fig. 5

This illustrates the type of fan installation in which there is absolutely no opening for air to circulate around the fan. This is the true "pressure" type of fan. Air cannot escape back around the fan, so all air "pulled" through the fan is "forced" through the furnace



Here is a graphic illustration of the advantages of a forced air system. The furnace can be placed at one side or in a corner. The ducts need no slope and can be placed up against the ceiling. The warm air registers can exhaust from outside walls and the return air can be placed wherever convenient

past. With certain modifications, these rules apply to fan systems of warm air furnace heating and both the 7th and 8th Editions of the Heating and Ventilating Engineers Guide give definite instructions for adapting and applying the general fan-system rules and formulas to the specific case of furnace-fan heating.



This is the Am-pe-co centrifugal fan made by the American Machine Products Co. of Marshalltown, Ia. On this fan, an oil pump, actuated by the revolution of the fan shaft, closes the by-pass dampers when the fan starts and opens them when the fan stops

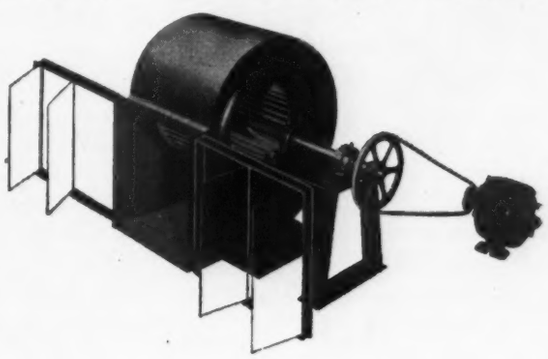
How to Design Fan Systems

A warm air plant using a booster-type fan should be designed and installed strictly according to the Standard Code because such a plant is essentially a gravity circulating system with the fan added to accelerate the air flow at times.

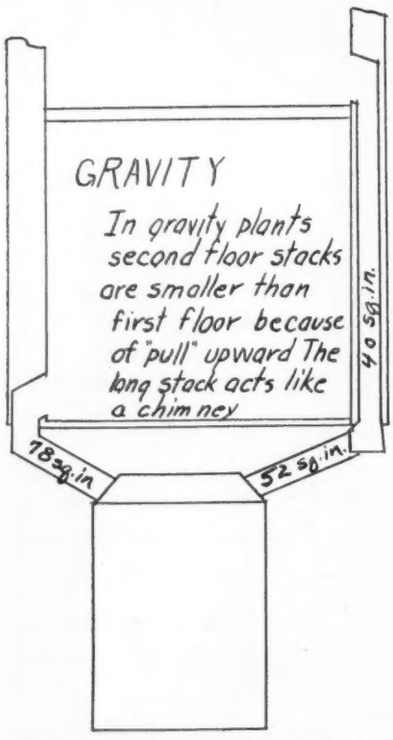
With an intermittently operated pressure-type fan of adequate capacity, the plant is a gravity system when the fan is not running. When the fan starts, it becomes a true forced air system with the air flowing under pressure and at much higher velocity than gravity circulation provides.

When the transition from gravity to forced circulation takes place, the frictional resistance which retards air flow becomes relatively greater in the second floor warm air pipe runs because of their greater length and the rectangular cross section of the wall stacks. There is a definite and well understood reason for this condition, the explanation of which is too long to include here but which may be found in Harding and Willard's "Mechanical Equipment of Buildings," Volume 2, Chapter XVII (Second Edition).

In an intermittently operated fan



The familiar Miles fan made by the Warm Air Furnace Fan Co. of Cleveland, is so well known that it hardly needs description. Both the propeller-type and the new Miles blower have their by-pass dampers closed by air pressure when the fan starts and opened by gravity when it stops



To be properly balanced a gravity job must have the second floor basement leaders and second floor stacks smaller than those of the first floor. The "pull" of the rising warm air in the stacks tends to draw more air to the second floor. The ratio of first to second is as 9 is to 6

system, this variation in frictional resistance causes a greater air delivery to the first floor than to the second *when the fan is running* if the plant is installed according to the Standard Code.

This is because the code rules for determining basement pipe sizes are for *gravity* circulation and they therefore take into account the aspirating effect (or greater operating head) existing in second floor runs due to the increased elevation of the warm air outlet above the furnace.

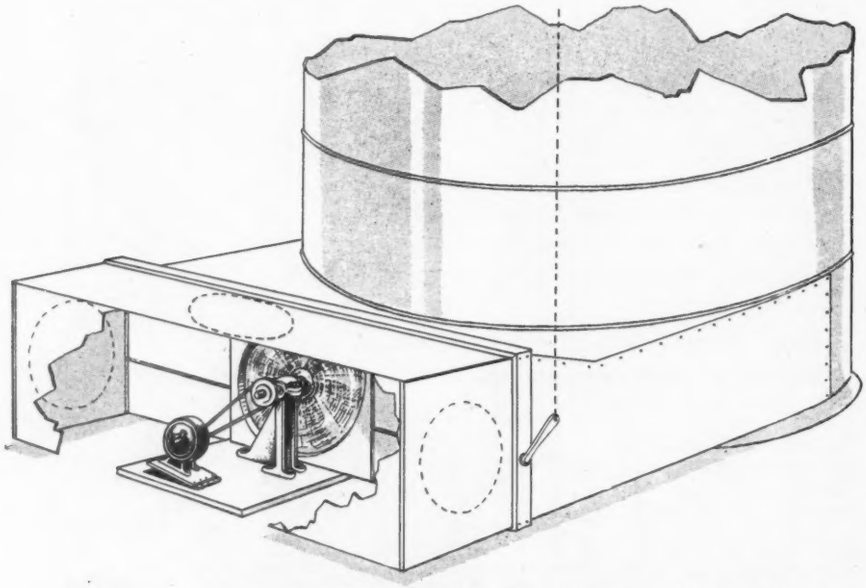
Consequently to keep the plant properly balanced, either the second floor runs should be enlarged or the first floor runs reduced so as to equalize frictional resistance. Since it is usually impractical to enlarge the second floor runs, it is obvious that the logical procedure is to reduce the sizes of first floor pipes or, in the case of an existing installation to which a pressure-type fan is to be added, to partly close dampers in the first floor runs.

A rule for determining first floor pipe sizes, which is reasonably accurate and has the advantage of being easy to use, is to figure the first floor pipes according to the Standard Code second floor rule.

For example, a first floor room has 90 square feet of glass surface, 405 square feet of net exposed wall surface and 2,405 cubic feet of content. Applying the second floor code rule to this first floor room gives:

Glass, 90 sq. ft. ÷ 12 =	7.50
Net exposed wall, 405 sq. ft. ÷ 60 =	6.75
Content, 2,405 cu. ft. ÷ 800 =	3.00
	17.25
× 6 =	104 sq. in.

When a fan system is used most of the rules of gravity must be forgotten. First and second floor pipes and stacks should be of the same area. The fan sets up an inside pressure which puts an equal pressure at each register



In the Service fan, made by Century Heating Service Co. of Indianapolis, the by-pass dampers operate in synchronism with the furnace draft. When the draft is opened, calling for more heat from the furnace, the dampers are closed mechanically and the fan is turned on by a Minneapolis Honeywell Furnacestat, thus changing the plant from gravity to forced air circulation. When the rooms are warm and the fire checked, the fan is stopped, by-pass dampers opened and the plant reverts to gravity operation

In other words, all pipe sizes are figured according to code rules except the multiplier 6 is used for *both* floors instead of 6 for the second floor and 9 for the first.

While there are quite a number of rules that might be used, the one just given has the advantage of simplicity and for the average job will be found fully practical and successful.

For buildings of unusual size or shape, or in any case of doubt, the careful heating contractor will refer the matter to the engineering department of the manufacturer whose furnaces he installs or to a fan manufacturer who is qualified to render dependable engineering service.

Some Advance Information on

THE NEW COST RECORDS

of The N. S. M. C. A.

ONE of the most important pieces of business transacted at the 1930 convention of the National Association of Sheet Metal Contractors was the approval and adoption of a standard cost accounting system for sheet metal contractors.

The system is designed primarily to be an easy and simple set of records to keep. Whether the shop be a small one with only two or three workmen, or a larger shop with twenty-five or more workmen the system is applicable. In the same manner any job, regardless of its size can be kept in the records.

The system was designed by the Trade Association Service Company of Pittsburgh. The system was devised after months of research into the records of hundreds of sheet metal contractors. It was checked by bankers, accountants and business men.

But two small books, with the necessary forms, are required to operate the cost system for sheet metal contractors. In one of these will be kept the records of Assets, Liabilities, Job Contracts, Overhead Expense, Accounts Payable and Accounts Receivable. In the other book will appear Cash Receipts, Cash Disbursements, and Purchases, Sales and Cost Records and the Monthly and Yearly Trial Balances.

On this page are shown one of

LABOR

DATE	J HOURS	H HOURS	HOURS	HOURS
6/5/30	8	8		
6/6/30	8	8		
6/7/30	4	4		
6/8/30	8	8		
TOTAL HOURS	28	28		

COST RECAPITULATION

MATERIAL	121	03
LABOR	42	00
PERMIT	–	
FREIGHT-EXPRESS-DRAYAGE	–	
INCIDENTAL EXPENSE	–	
FOREMAN	–	
DIRECT COST	163	03
OVERHEAD EXPENSE	29	40
TOTAL COST	192	43
SELLING PRICE	211	67
LESS COST	192	43
PROFIT	$ 19	24
LOSS		

JOB RECORD JOB No. 1143

NAME N. C. Smith

LOCATION OF JOB 767 Broadway

WORKMAN F. Thomas & Geo. Jones

KIND OF WORK Copper Roofing

ORDERED BY N. C. S.

TIME STARTED 6/5 - 8 AM TIME FINISHED 6/8 - 4:30 P.M. DATE 6/8/30 193

MATERIAL TAKEN	MATERIAL USED	MATERIAL RETURN	DESCRIPTION OF ITEMS	COST @	COST AMOUNT	SELLING PRICE @	SELLING PRICE AMOUNT
350	327	23	lbs - 16 oz Soft Copper	28	91 56		
5	3¼	1¼	lbs - 1" Copper Nails	30	1 05		
20	17	3	lbs - Solder	30	5 10		
60	54	6	4" Corr. Copper Conductor	38	20 52		
10	6	4	Conductor Lasts.	10	60		
			Fuel - Flux Etc		2 20		
			Material Cost	$	121 03		
			Labor J 28 hrs @	1.00	28 00		
			" H 28 " "	50	14 00		
			Direct Cost	$	163 03		
			Overhead 70% of Pro Labor		29 40		
			Total Cost	$	192 43		
			Profit 10% on Cost		19 24		
			Selling Price	$	211 67		

NOTE: If profit of 10% is desired on Selling Price, multiply cost of 192.43 × 100 and divide by 90 which would make Selling Price $213.81 showing Profit of 21.38 instead of 19.24

LABOR

DATE	J HOURS	H HOURS	HOURS	HOURS
6/5/30	8	8		
6/6/30	8	8		
6/7/30	4	4		
6/8/30	8	8		
TOTAL HOURS	28	28		

OTHER EXPENSES

WORKMANS ORDER JOB NO 1143

NAME W. C. Smith

LOCATION OF JOB 762 Broadway

WORKMAN F. Thomas & Geo. True

KIND OF WORK Copper Roofing

ORDERED BY W. C. S.

TIME STARTED 6/6- 8 AM TIME FINISHED 6/8-4.30 P.M DATE 6/8/30 193

TAKE NOTICE NO WORK OTHER THAN SPECIFIED ABOVE TO BE DONE WITHOUT SIGNED ORDER

MATERIAL TAKEN	USED	RETURN	DESCRIPTION OF ITEMS USED
350	327	23	#3- 16 oz Soft Copper
5	3½	1½	#3- 1" Copper Nails
20	17	3	#3- Solder
60	54	6	4" Corr. Copper Conductor
10	6	4	Conductor Fasts
			Fuel- Flux Etc.

CAR CHECKS	
TRUCKS	
GASOLINE	
SOLDER	
CANDLES	
SCREWS	
PACKING	
CEMENT	
PUTTY	
PAINT	
RIVETS	
NUTS- BOLTS	
NAILS	
CHARCOAL	

CUSTOMERS SIGNATURE W. C. Smith

the job cost record forms completely filled out. This sheet shows all the details pertaining to a particular job. Another form shown illustrates how a workman's order sheet should be filled in for the same job with all the information given by the workman. These two forms show how the system should work on a typical job.

In the extreme right hand corner is the number of the job just completed. Following is the name and address of the customer. Then comes a record of the men working on the job, together with a description of what work was ordered. Finally is a notice of the authorization, then a written record of the time started and time finished.

All of this is valuable information to have for checking purposes, and as a reference for estimating purposes on similar future work.

Immediately under this general information is a list of every item of material that was used on the job. Notice the large amount of information that is contained in a small space. And notice how valuable this information is to you when the time comes to bill the job to the customer.

It is not always possible to order just the right quantity of material, nor to take just the correct quantity from your store room to the job. Unless some careful check is kept of the material, some will be lost or destroyed. The first three columns of this form enable you to keep an exact count of how much of each item was taken out, used and returned. No guess work—the exact figures are there. This one feature of this form, if properly used, will stop expensive leaks and will show you more profit at the end of the year.

In the upper left hand corner is a record of the hours of labor that were required to do this particular job. No guess work here either. You know that it required 28 hours of a journeyman's time, and 28 hours of a helper's time to complete the job.

The extension in dollars and cents will vary for each section of the country. Just figure your own cost of materials and labor for each item, and you have a complete picture of a job that might have been completed by you or your organization.

In the lower left hand corner is

a Cost Recapitulation showing the amount of material, labor and other expenses that applied to the job, plus overhead expense, gives the total cost of the job. Deducting the cost from the selling price gives the profit that has been made on the job.

In figuring profit, some people use the following method: Material, Labor and Overhead, plus 10 per cent as this Job Record sheet will show, but in order to get 10 per cent net on the selling price, it should be figured as follows: Cost or $192.43 by 100 and divided by 90 will give the selling price of $213.81 or a profit of $21.38 instead of $19.24 as is shown by the other method.

Another feature of this Job Cost Record Form is, that just as soon as the job is completed and invoiced, it is torn from the pad and transferred to the Accounts Receivable Ledger, eliminating the necessity of re-writing the information on a ledger sheet, as the Job Record Form becomes the ledger sheet and is placed in its proper position or place.

These Job Record sheets are very inexpensive, they come in 50 sets to a pad and sell for 60c. a pad.

By the use of these forms a contractor will know what he has made on every job or contract, no guess work, as he will have all of his costs and figures on each job he does.

The original price of this new cost finding system of the National Association of Sheet Metal Contractors is very inexpensive, as follows:

No. 1 Set recommended for businesses up to $50,000 annual volume, $30; No. 2 Set recommended for businesses $50,000 to $100,000 annual volume, $50; No. 3 Set recommended for businesses $100,000 and up, $75.

THE RIVERSIDE CHURCH

(Continued from page 23)

tive work weighed more than 10 tons. It was all 16-ounce, lead-coated, the coating being applied by the contractor.

The roof of the nave is large in size and is all copper covered. The copper here is also 16-ounce and is also lead-covered. The roof is of the batten type with the battens placed on 15-inch centers. This is somewhat closer than customary, but is in keeping with the extra ounce of protection and substantialness built into this church. The battens are of the inverse batter type with the lower width just a little less than the top of the batten to provide for expansion of the copper sheets.

The copper was put on in sheets as long as convenient and the battens were capped.

An interesting feature of this nave roof is the small dormers which admit light and air to the attic space. These were not cut through the roof until it was ready for sheathing. After the battens were in place and the copper work begun the spaces for these openings were cut through the roof. These dormers are formed and framed in copper and have a copper lattice work grille in the face.

The gutters are of copper, exposed in the small sizes, but lined in the larger sizes. All gutters over 14 in. in width are lined with 6 by 9 1-inch roofing tile laid on a five-ply felt and pitch waterproofing. The gutters are of the flat box type.

Throughout the entire job more than 50,000 pounds of copper were used. This was all lead coated by the contractor and required a large amount of lead coating.

The church is one of the largest structures of its type in the country. It has cost some six million dollars and has been under construction since early in 1927. The architects for the building are Henry C. Pelton and Allen and Collens, associate architects. The general contractor is Marc Eidlitz and Son, Inc., New York.

COST ACCOUNTING

(Continued from page 20)

You sold so much material which cost you so much money, resulting in a certain gross profit. You also sold a certain amount of labor, for so much, and you paid so much for it, leaving a certain gross profit. You will, by adding the sales, cost of sales and gross profit items for material and labor, obtain the totals of the sales, the cost of sales, and the gross profit for the month. You will find that you incurred certain expenses, which, deducted from your gross profit, will leave your net operating profit. You took some discount, and, possibly, collected some interest. These, as other income, are added to the net operating profit to obtain the final net profit for the month. Adding the profit earned in prior months to the profit earned this month gives the total profit to date for the current year. This is the figure which appears last on the Balance Sheet, under the general heading, Net Worth, and in the account, "Profit to date."

If your profit for June is not as good as the profit for May, look into your Operating Statement for the cause. Either your sales were too low, your cost of sales was too high, or your expenses ate up your gross profit. By comparison of each month with the one immediately preceding it, and with the corresponding month of last year, you will find many things that can be remedied and that will increase your profits very satisfactorily.

These two statements, presented for your information and study, by your bookkeeper shortly after the close of each month, will, beyond all question of doubt, enable you to increase your success materially. It will teach you that there are certain danger points in your business which must be carefully watched; that there is a certain minimum business (or sales) below which you cannot operate and break even, and that by constant application of intelligent effort you can build your sales to a higher and more profitable basis.

DO YOU REMEMBER

That Smoke Pipe Moisture Problem?

Here's Three Solutions

IN the June 21 issue we published a problem from Robert J. Reickenbach of Bay City, Michigan. This problem had to do with moisture dripping from a smokepipe. The layout of the heating plant was shown and is reproduced again here. The problem is interesting in that the line of travel of the smokepipe is an uncommon one and so arranged that moisture condensation would undoubtedly be serious.

The problem as presented is as follows:

Moisture drips from the pipe even when there is a steady fire in the furnace.

The basement is dry, but is without much ventilation.

There is only about 3 feet of smoke pipe in the basement, as the smoke pipe comes off the furnace with an elbow, runs up vertically through the basement ceiling about 9 feet, then into a bedroom.

About 18 inches below the bedroom ceiling another elbow runs the pipe horizontally about 6 feet, where a third elbow takes the pipe into the chimney.

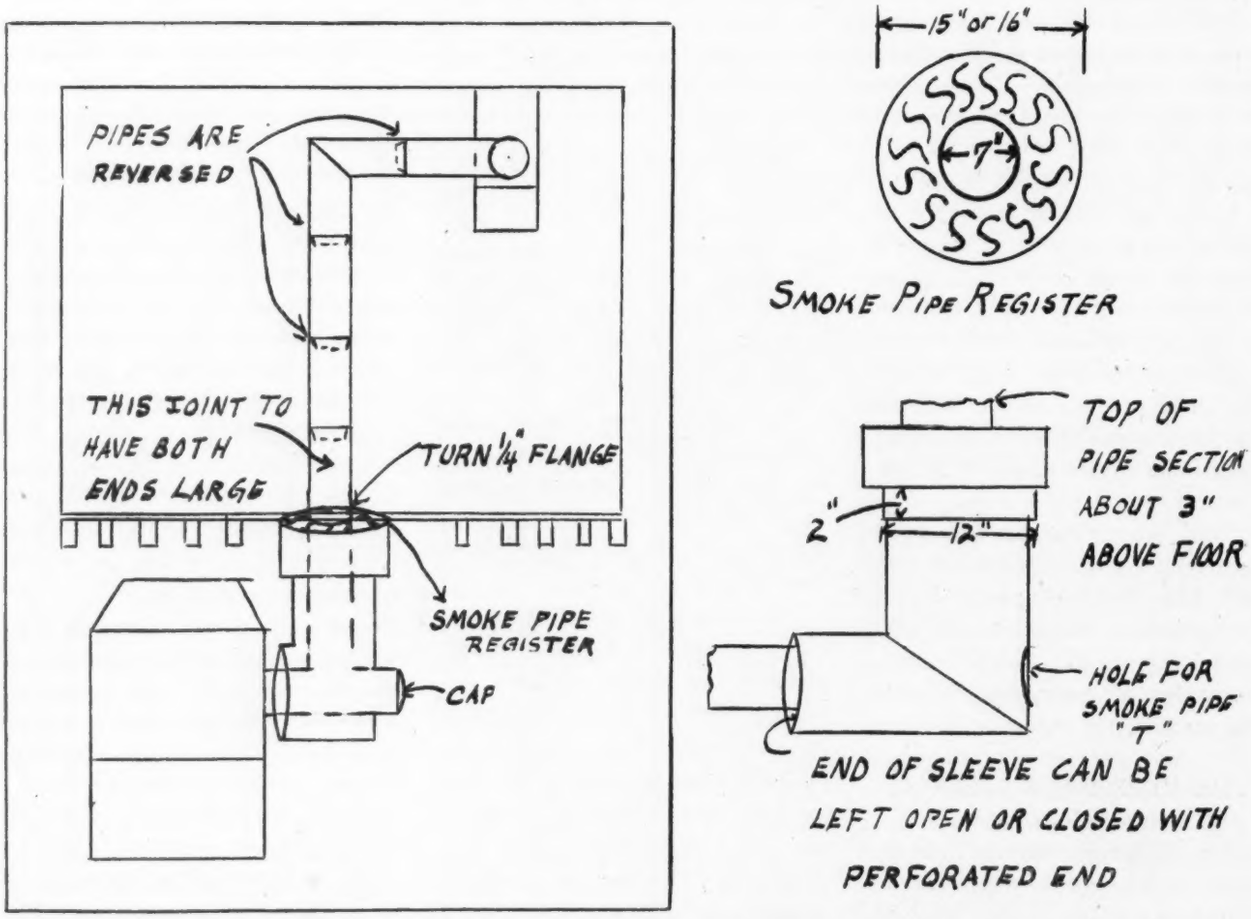
The chimney does not extend into the basement.

I have cleaned the pipe and chimney base thoroughly and repeatedly, without results.

This problem caught the attention of our readers and we have had several replies. Here are three of the answers.

The first one is from Ollie M. Dodd, heating man, Lebanon, Indiana. He says:

"In regard to Robert J. Reichenbach of Bay City, Mich., his trouble of his smoke pipe sweating and dripping is due to condensation. While it is true that it runs up through what we would say a warm bed room I suppose the bed room has a register or perhaps it is heated from this pipe which no doubt



This is the plan E. S. Burns, sheet metal contractor, Syracuse, N. Y., believes will eliminate the moisture condensation trouble. The collar also acts as a heating register. Not bad, is it?

would throw off enough heat to heat the room. But that does not matter whichever it may be.

"This pipe runs through three different temperatures—the basement, the floor temperature and the ceiling temperature in the bed room and by the pipe extending upward so near the top of chimney will of course draw more moisture.

"At one time I extended a smokepipe up through the floor only 2 feet, and the pipe sweat a great deal.

"I have had a great deal of experience in extending 3-in. vent pipes into the attic when I could not reach a flue and they most always drip. This is condensation, which is the difference in temperature in the layers of air the pipe runs through.

"Some might not agree with me but nevertheless it is the fact."

Our good friend, P. H. Cotton, from down in New Orleans, also felt the urge and sends in his suggestions. He says:

"In regard to the condensation developing in connection with the flue in connection with the warm air furnace problem outlined in June 21st issue of your valued trade paper:

"I suggest that Mr. Reichenbach run a continuous pipe from the present pipe right up through to the top of the brick chimney. Even better results will be had if this pipe extends 3 feet to 4 feet above the top of the brick chimney, with a good cap put on top so as to avoid a down draft.

"I have tried this arrangement on various furnace smokepipes that condense and it has proved a success.

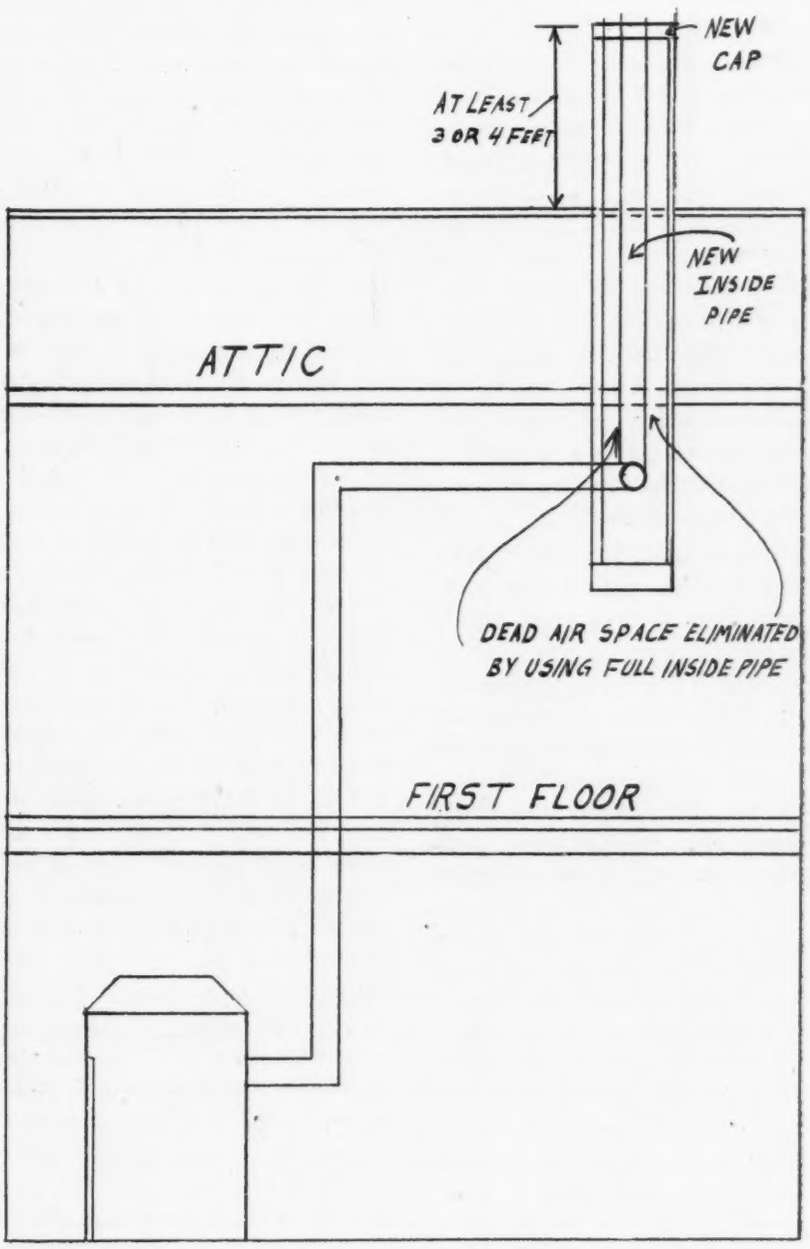
"I think his sweating is caused by the chimney area being larger than the pipe area. This causes a dead air space in the chimney. This in turn will produce a certain amount of moisture as the chimney does not have the same degree of heat as the smokepipe, due to this dead area."

A sketch showing how this new pipe inside the chimney would appear is shown.

The third of the trio whose answers are published here is E. S. Burns, sheet metal contractor, Syracuse, New York. Mr. Burns also sends a sketch and a good one it is, too. Mr. Burns' idea is quite different from the others and makes use of some nice heating ideas in addition to eliminating the condensation difficulty. His register idea is a heat saver of no mean capacity, we should judge.

"I am enclosing a duplicate of a sketch which I offered to Mr. Robt. J. Reichenbach of Bay City, Mich.

"Your issue of June 21st contained an appeal to readers to solve a problem which has been bothering Mr. Reichenbach recently. I think he will have no trouble if he follows instructions in sketch. I venture to state that the 'sweat' he refers to is creosote. I have met similar conditions in the northern part of New York state. Such conditions were of common occurrence some years ago. The pipe should be encased in cellar with cast smokepipe register on floor and from floor to chimney all pipes should be reversed."



P. H. Cotton, New Orleans, believes that extending the smoke pipe right up through the chimney will eliminate corner dead air which is responsible for the condensation

An Unusual Two-Way Y

By **L. F. HYATT**
Contributing Editor

THE accompanying drawing illustrates the simplified or short method of developing a pattern for an angular furnace boot, rectangular to round.

Draw the line b-d equal in length to the long side of the rectangular opening of the furnace boot. From points *b* and *d* draw perpendicular lines and upon these lines step off a distance equal to the short side of the rectangular opening. Letter these points a and c as shown and connect them.

Draw a center line midway between a-b and c-d, locating *m* on the profile which is the location of the seam. This completes profile A.

Now drop lines of indefinite length from *b* and *d* and any desired distance from these points draw a horizontal line a-b-c-d. This line will be the top line of the elevation. Now from the corner lettered a-b and corner c-d step off distances equal to the width of the collar locating points a′ b′ and c′ d′ and connect these points with another horizontal line.

From the point lettered c′-d′ draw a line on a 45° angle ending at 1′. From point 1′ draw a horizontal line equal in length to the width of the collar at the round opening and letter this point 1. Drop lines of indefinite length from points 1 and 1′. With the instruments set one half the diameter of the round opening place the divider on point 1 and strike an arc intersecting the line dropped from 1. With this point as a center draw the half profile as shown in the elevation. With the dividers step off eight equal spaces and number them as shown. Draw the horizontal line 9 and 9′. From each of the points on the half circle draw horizontal lines as shown intersecting the vertical line at 1′, 2′, 3′, 4′, etc. Connect points 9′, 8′, 7′, 6′ 5′ with point a′ b′ on the elevation. Also connect points 5′, 4′, 3′, 2′, and 1′ with point c′-d′.

It is now necessary to find the true length of two groups of lines. As both halves of the pattern are the same the lines running from corner *c* on the profile are the same length as those running from *d*. The same is true of the two corners *a* and *b*.

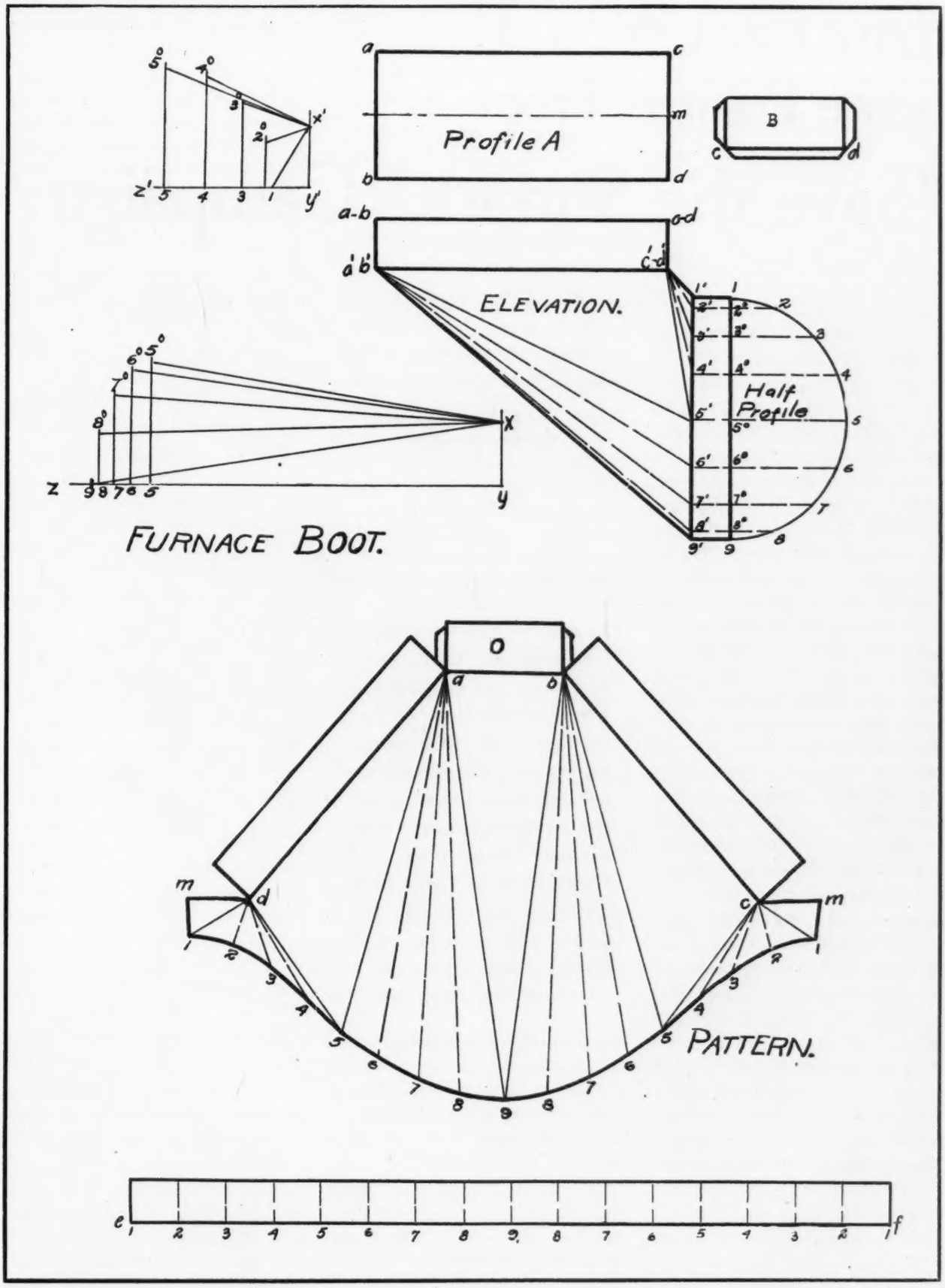
Now draw the angle x, y, z and with the dividers set equal to m-d or m-c step this distance off on the vertical line locating x. Then with the dividers set from point a′ b′ to point 9′ on the elevation step off from point y on line y-z an equal distance, locating point 9. Next with the distance set a′ b′ to 8′ step off as before on y-z the distance y-8 and from this point draw a perpendicular line and step off the distance 8-8°, which is equal to 8 to 8° on the half profile, and connect this point with point x. Take the distance a′ b′ -7′ and step it off again on line y-z, locating point 7 on the diagram of lines. Draw a perpendicular line from this point and step off distance 7°-7, found on the half profile, and connect this point once more with point x. Continue in this manner up to and including a′ b′ -5′. It is now necessary to draw the angle x′ y′ z′ to receive the shorter group of lines. Make y′ x′ equal to m-d as in the previous group of lines, and with the instruments set to the length c′-d′ to 5′ step off this distance from y′ locating point 5 on line y′-z′. From this point draw a perpendicular line and upon this line step off the distance 5°-5 found on the half profile. Connect this point with point x′. Now take the distance c′ d′ to 4′ and step it off as before on line y′ z′ locating point 4 on line y-z. Draw a perpendicular line as before and upon this line step off the distance 4°-4 and connect this point with x′. Continue in this manner with the other lines of this group. The true length of the seam line is of course the distance c′-d′ to 1′ found on the elevation. This completes both groups of true length lines and the next step is the development of the pattern.

Draw the line a-b of the pattern equal in length to the distance a-b found on profile A. From the group of lines found on angle x y z take the distance x-9 which is the true length of the line a′-b′ to 9′ found on the elevation and with a and b on the pattern as centers strike arcs intersecting each other at 9 of the pattern. Now take the distance a′-b′ to 8′ as a radius and with the two points *a* and *b* as centers strike arcs of indefinite length. Then from the half profile take the distance 9 to 8 and with 9 on the pattern as a center strike an arc intersecting the arcs just drawn, locating the two points numbered 8 as shown. Continue in this way with the lines up to and including points a-5 and b-5. From profile A take the distance a-c or b-d, which are the same, and with points *a* and *b* on the pattern as centers strike arcs of indefinite length.

From the angle x′ y′ z′ take the distance x′ to 5° which is the true length c′-d′ 5′ found on the elevation and with the two points numbered 5 as centers strike arcs intersecting the arcs previously drawn locating points *c* and *d* on the pattern and completing the large triangular sides of the pattern. From angle x′ y′ z′ take the distance x′-4° and with points c and d as centers again strike arcs of indefinite lengths. Now from the half profile take the distance 5-4 and with points 5 as centers strike arcs intersecting the arcs already drawn locating points 4 of the pattern.

Continue in this manner with the other lines of this group up to and including the lines 1-c and 1-d.

Next take the distance d-m found on profile A and with c and d on



the pattern as centers strike an arc of indefinite length, and with the distance c' d' to 1', found on the profile, and 1 as a center strike arcs intersecting the arcs already drawn and locating points m. The seam, of course, is added to the side from point m to 1. Laps are also added as shown at a-b of the pattern.

Because of the shape of the pattern it is necessary to make the side

(Continued on page 40)

Why Can't We Take Some Pointers From "Save the Surface" Campaign?

IN this day of intensive competition, reduced profits, decreased buying and general hesitancy on the part of the buying public, no individual or no one organization can afford to overlook a single idea which may mean more profits.

This is especially true of those large groups of organized individuals which we call associations. No association is worth the trouble of paying dues unless it functions to make the buying public conscious of its appeal. Our own Warm Air and Sheet Metal Associations are endeavoring to make the public warm air and sheet metal conscious. At the same time hundreds of other organized groups are trying to make the public, radio, automobile, paint, rug, plumbing, bedding, concrete, brick conscious. There are endless numbers of such organizations.

Every one of these associations has just one idea in mind.

Get the public to spend its dollar on their product before it can spend the money for something else.

It is very much in keeping with the policy of American Artisan, therefore, to call attention to some of the activities of the other organizations. For example we publish here two addresses delivered before the 39th, annual convention of the Ohio Council of the International Society of Master Painters and Decorators of U. S. and Canada.

We are not trying to be funny in giving the name. That's the real name of the association. The addresses are well worth reading. Some of the pointers are well worth thinking about and putting into effect, not only as individuals, but as local, state and national organizations.

The first address is that of William Downie.

Save the Surface Campaign Creates Business

At a time when the majority of reports on business appear drab in contrast with the brighter days of last year, it is a refreshing pleasure to report on one activity that forges ahead in good times and bad, in fair weather and foul—Save the Surface Campaign.

In spite of the decreased business the paint people are advertising. Their campaign is being pushed, but more important, the members are backing and using the campaign more vigorously than ever before. If these folks find national advertising advantageous — why not the heating and sheet metal industries?

I might add to this introduction a fact that has become more apparent than ever before—a sure creator of sales and builder of business is even more valuable during a depression than when the going is smooth. Save the Surface Campaign has worked ceaselessly for us this last year and has produced results when they were needed most.

Let us run over the accomplishments of the campaign since our last convention and consider the great strides it has made in creating a demand for our services, bearing in mind that the fundamental purpose of the organization is to make the public more conscious of the need for paint, varnish, lacquer and enamel. And this is being done every day in a hundred different ways.

The national advertising campaign conducted during the year has been most effective. Nine full color pages in the Saturday Evening Post, reaching over 3,000,000 people in each issue and nine half pages in the Country Gentleman, with a circulation approaching 2,000,000. This schedule repeated the powerful message of the campaign with telling effects. The advertisements were full of human interest with an underlying theme of the need for our products and services. There can be no doubt that the results have been excellent.

Through a constant flow of interesting material, the "Editorial Service" is reaching a vast army of people. Articles written at headquarters appear weekly in hundreds of newspapers with an audience in excess of 25,000,000. The best magazines in the country, with combined circulations of nearly 9,000,000, use this material in ever increasing quantities. In step with progress, radio talks are being used by 65 stations covering the entire nation. It is impossible to state accurately the number comprising this

huge unseen audience, but it is safe to assume that it runs into a staggering figure. Just consider for a moment what this triple service means to all of us. Here are millions of people all over the country who are being educated daily in the need for and the advantages of paint, varnish, lacquer and enamel. Consider the logical consequences of this vast program on our individual businesses. Here is something real—something tangible, and yet it is but a part of the multitudinous activities of Save the Surface Campaign, merely one of the many steps being taken to increase your business and mine.

The Guide Book of Painting and Varnishing, with which most of you are familiar, has been a sensational success. More than 60,000 copies of this splendid book have been sold —60,000 active workers on behalf of the industry. It is noteworthy that throughout The Guide Book there are constant references to the master painter and the need for his services in beautifying and preserving the home. Obviously, this is a very potent influence in creating business for us and widening the scope of our work.

The Sales Training Course in Selling Painting and Decorating will be gone into at greater length by Mr. Tibbets. I will say, however, that those who have taken the course have expressed complete satisfaction to meet modern competition. My only regret is that more have not availed themselves of this splendid opportunity to acquire the most modern and successful methods of selling.

The two films, "The Romance of Paint and Varnish" and "Home Is What You Make It" are enjoying great popularity and wide circulations. Audiences all over the country have viewed these films and, as a consequence, the industry has received a further impetus by this means. You will note the Save the Surface Campaign has not overlooked one modern method of presenting the message of the industry to the consuming public. The results are incalculable.

Every industry today needs more salesmen. Not just any salesman, but artisans trained to sell. Such salesmen know their merchandise from front to back. The heating and sheet metal industries have the artisans—what they need is salesmen made over from artisans. Here is the story of the paint industry's sales training efforts

In conjunction with all the above, there are a variety of aids prepared for the individual use of master painters such as slogan electros, wet paint signs, co-operative advertisements, etc. These efficient builders of business and good will are playing their part, too.

The latest issue of that invaluable publication, "Save the Surface News" is one of the best yet prepared. It contains a complete catalogue of all the material of the campaign and should be retained in your files for future reference. Copies are available in this room, and I would appreciate your taking one and keeping it as a constant reference of the campaign's material.

It is possible to discuss Save the Surface Campaign and its achievements for hours without exhausting the subject, but this is not my purpose. I have simply outlined, in a brief, general way what the campaign has accomplished in the past year and what it is doing every day for all of us. I believe, and I am sure that you will agree with me, that it has been of tremendous benefit to master painters and to the entire industry. As I said in the beginning of my report, this is true irrespective of business conditions. The past year might have been worse if it had not been for the ceaseless, well-directed and powerful influence of Save the Surface promotional work. It has been a good friend to us and I am happy to accord it the recognition it so heartily deserves.

The second address was given by Albert B. Tibbets. Its title was:

The Save the Surface Sales Training Courses

I am not a salesman, so I will make no effort to sell this course to you. I shall simply discuss it with you and then let you sell yourselves. To give you a taste of what is in this training course I will now show you a film which National Lead Company has shown all over the country. This film, entitled "Three Painters," is based on the first two chapters of the Save the Surface Selling Course for Painters.

I would now like to discuss the film for a moment. An analysis shows that it gives more than just the story of the selling methods of three painters. Take George Hanson—he is the man who is willing to take a price that will pay him nothing more than wages. The second painter in the picture, John Birch, is a pretty good type of painter. He isn't afraid to ask a price which will give him a fair profit, but he does not figure in all his overhead. Birch fails to get the job because he does not back up the price by giving the banker real reasons why he should pay more than the first painter asked. In other words, Birch did not do a good selling job.

Then we come to Anderson. He knows how to figure a job to give him a fair profit. His selling methods are the kind you would all like to use if you knew how. Anderson's methods are absolutely necessary in these days of keen competition. Perhaps you are asking, "Why are his methods so much more necessary today than in the past?" The answer is simple. Today the competition a painter faces

is not all in his own craft. He still must worry about the price cutter, but his real competition is the dealers and manufacturers of automobiles, radios, electric ice boxes, etc.

These people are bombarding the public with high pressure salesmen, advertisements and through the mail. They are leaving nothing undone to get the consumer's dollar. The result is that people are buying their products instead of painting their houses.

The only solution to the problem is that painters must learn to do as good a selling job as the automobile and radio men do. And there is a simple, easy way to learn how to do a good selling job. The picture you have seen should have convinced you that good selling methods are within the reach of all. It is based on the first two chapters of the Sales Training Course to Save the Surface Campaign.

This selling course is based on actual selling methods followed by successful painters all over the country. It is easy to read. It gives a great number of practical, hard-headed ideas on selling and getting new and profitable business. It tells how to advise the customer on color, how to sell him on careful surface preparation, how to meet objections, how to win over the price cutter. It points the way to get the kind of business the painter can handle at a profit.

The cost of this course is $25.00. There are no extras. The price has been made possible only through the co-operation of the manufacturers in the industry. There are six units to the course, one being sent each month. Business Training Corporation gives the subscriber correct solutions of problems in business and selling, raised by taking the course. I know that there is not a man here who would hesitate to spend $25.00 on his car.

In the folder I have distributed there is an enrollment blank. What you do with it is entirely up to you. If you decide to fill it out, you can hand it to your secretary at the end of the meeting or send it to Save the Surface Campaign, 18 E. 41st St., New York. If you wish to attach your check, you will start receiving the course in a few days.

If you decide to take the course, let me suggest the Cleveland plan. It is my understanding that 27 members subscribed, appointed a leader and then made the course the program for their regular meeting nights. If this plan is followed, Save the Surface Campaign will supply any painter whom you designate as leader with booklets on how to conduct group meetings.

LET'S TAKE STOCK

(Continued from page 17)

thermostat upstairs says, "It's getting cold up here," then go into action until the thermostat cries, "enough."

The heat that is generated in that automatic action can move of its own change in weight into the house, or we can place a mechanical device on the furnace that will compel that heated air to circulate all through the house and at just the velocity and temperature we figured out for it perhaps months ago.

This system will wash or filter the air to remove all dust and give the air that fresh, sweet smell every householder wants. And when the days get warm as they are now that fan and washer will cool the air, circulate it through the house and the owner can sit with the windows locked shut and laugh at the folks sweating outside.

Where yesterday our manufacturers were selling us so much cast iron or steel, they are today selling us furnaces that are designed to meet modern heating needs. A lot of the manufacturers have stepped out and are putting on the market complete heating units which have everything built right into the plant. That's a piece of merchandise to take out and show any customer.

We don't even have to stick to the hard fuel burner. We have plenty of oil and gas heating plants that put us right in the roadway to modern heating sales. And if we operate in a coal section, why not look into this stoker business and conversion attachments for spring and fall?

If we in the industry will just sit down to *think* we will be so prideful of the business we are in that we will just have to go out and tell somebody about it.

And that action, gentlemen, is salesmanship.

Perhaps most of us are so close to the trees, we can't see the forest. We are so close to price cutting, lowered profits, cut-quality installation that we can't see the great field out there just crying for us to step over and live in it.

The only way we can get out of that rut is to sit down and take stock. It doesn't cost anything but a little mental effort.

If as many of us say we are in a loose end year, why not sit down a few minutes a day and think about ourselves. Then as a new thought comes to us, step out of the shop and try it out on a few prospects. Perhaps the first few attempts won't bring us enough to buy a new Packard, but if instead of getting discouraged we go back and think some more we will eventually work out the right system.

A TWO-WAY Y

(Continued from page 37)

c-d separate to correspond with the side ab, shown by O on the pattern. Laps are added, as shown at B. This piece is the same size and shape as the one which is added to the triangle a-9-5 of the pattern or *O*. It is now necessary to develop the pattern for the collar. Draw the line e-f an indefinite length. Set the dividers the distance 1 to 2 found on the half profile and with this distance step off the sixteen spaces on line e-f and number as shown. Draw perpendicular lines as shown from each of these points. On each of the end lines step off distances 1′ to 1 found on the collar on the elevation view. All seams on the collar, thus completing the patterns for the furnace boot.

GRAVITY EXHAUST VENTILATION

Heat Removal in Factories

HEAT removal is a growing field among industries. This is due to several different factors.

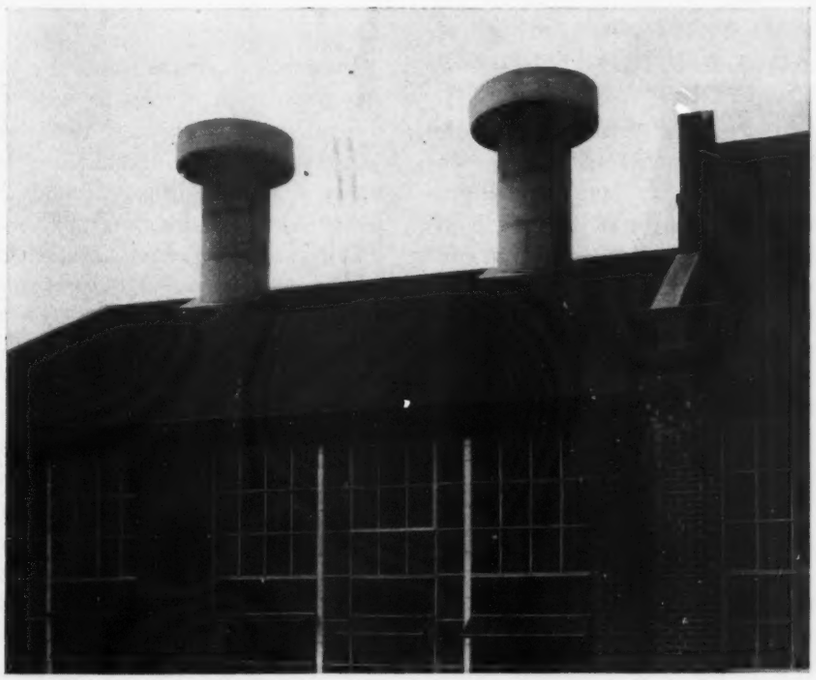
One of these factors is the undeniable tendency of employers to better working conditions. Another factor is the increased use of heat in all forms and intensities in constantly more complicated forms of manufacturing processes. A third factor is that of increasing specialization together with group or line production methods. This gives each human link in the production chain a greater importance, so that the loss of a link or two may throw the whole production organization out of alignment. Under these circumstances when a man is carried out overcome with heat, or goes home sick, it becomes a more serious matter than the mere hiring of another man to take his place.

Industrial heat removal problems vary from mild cases affecting the comfort of employes to extreme cases where the health or even the lives of workers are at stake. Ventilation is the most practical solution. It seems that the more extreme the conditions, the more certainly the solution is ventilation. Ventilation not only removes the heat, but also furnishes fresh air, the very freshness of which contributes quite largely to the possibility of efficient productive labor. A person can stand infinitely more heat in fresh circulating air than he can in stifling, stagnant air.

A good example of intelligent handling of an extreme problem of this nature is that of the Ames Shovel & Tool Company's plant at Anderson, Ind. The Ames Anderson plant, in charge of Edwin T. Nipher, plant manager, is one of several plants of this organization manufacturing high grade shovels and scoops. This company has a sane and forward looking policy with regard to plant conditions and plant operation.

Certain conditions have made necessary the grouping of a number of furnaces in one building. Each of these furnaces throws off an enormous quantity of heat. In addition to the furnaces, stock in process is often red hot and radiating heat. The building is well equipped with windows and doors and part of it has operating sash in a monitor at the top. The building is divided into two parts by a partition which drops down from the roof to within 12 or 15 feet of the floor. The portion of the building to the east of the partition has no ventilation above the top of the doors and windows, as all of the monitor sash are on the west part of the building. This leaves a dead air pocket from about 12 feet above the floor up to the peak of the roof, a matter of 35 feet high.

It might seem as if air sweeping through this east building from one side to the other through open doors and windows would furnish a satisfactory condition, especially as the monitor sash should draw heat, smoke and fumes from the east building into the west building, there to be discharged through the monitor sash. As a matter of fact, in spite of the very considerable



These two 54-inch ventilators handle some 900,000 cubic feet of air per hour. This provides 18 air changes per hour for the 50 by 40 by 25-foot furnace building

amount of window and door ventilation, conditions in this room were pretty bad.

In going over the matter of ventilating this entire building with the writer Mr. Nipher said, "Let's first do the obvious thing, that is, let's ventilate the east room by putting ventilators on the east roof which will exhaust the hot air and gases from the pocket underneath." The dimensions of this room are 50 by 40 by 25 feet. We estimated that two 54-inch ventilators handling something better than 900,000 cubic feet of air per hour would give eighteen changes of air per hour. Mr. Nipher in this connection considered four different types of ventilators, the rotary ventilator, the spihon ventilator, the storm band stationary ventilator and a plain flue cap type.

The 24-foot ceiling over the furnaces causes a dead air space from a point some 12 feet off the floor to the peak of the roof. A positive exhaust has to be used to penetrate the dead air blanket

It was not a question of price in the terms of dollars and cents, but was a question of price in the terms of results. He determined, and rightly, that he would get more results out of a given amount of money put into a properly designed type of storm band ventilator than any other. The plain flue cap, or a home made ventilator, would of course be cheaper in price, but more expensive as judged by results.

For certain types of installation a rotary ventilator would have been cheaper and better on the basis of efficiency, but conditions here were such that a storm band type ventilator would operate very satisfactorily. His judgment in the matter has been vindicated by results.

Inasmuch as this is rather a special installation it may be well to call attention to the fact that this situation is rather unusual and that under conditions usually found in industrial ventilation, a rotary ventilator is both more certain in results and cheaper as to efficiency and as to capacity per dollar. I have solved ventilating problems by merely taking off stationary ventilators and replacing them with rotary ventilators on the same flues. These instances do not mean that either a rotary or a stationary type should always be used, but simply bring out the fact that each ventilating problem is deserving of a careful survey followed by the use of a device adapted to its needs.

The result of the installation of two 54-inch storm band ventilators was that the roof space was cleared. Both smoke and heat arising from these furnaces travel immediately upward to be pulled out through the ventilators. This leaves the aisle and working spaces free from gases and fumes, and also alleviates the oppressiveness of the heat.

So far as the heat removal is concerned the workmen of course cannot feel the heat going out, but they can feel the cool air coming in. The air is clearer, cooler and fresher and workmen better satisfied.

Mr. Nipher states that the next logical step must be for them to close up the sash in the monitor and place ventilators on the monitor roof so as to withdraw the hot air and gases from the west room with positive ventilator action. He realizes that monitor sash are not effective and as rapidly as is possible, consistent with continuous plant operation and careful planning, he is working toward the ideal arrangement of introducing cold air in quantity at the floor line and withdrawing heated air from the roof with ventilators. He has experimented some with fans, both for recirculating inside air and for bringing in outside air. The fans for recirculating inside air were not a success due to the fact that the recirculated air was hot. Furthermore the motors burned out within a few months.

A fan bringing in outside air from a duct opening through the roof and dropping to within 8 or 9 feet of the floor gave promise of being fairly successful, but Mr. Nipher is satisfied that he can get better results through placing his fans in the wall at the floor line and introducing horizontal air columns spreading over the floor. This in conjunction with exhaust ventilators will give him cool air coming in at the floor line constantly pushing up the heated air toward the roof where it will be pulled out by the ventilators. This is an ideal heat removal system.

Baffling and screening against radiated heat is a factor which is not being overlooked, but is being

held up pending a rearrangement of equipment. Mr. Nipher, who is not only a graduate engineer but a close student of production methods, is operating under carefully worked out policies on both production and plant conditions.

In building a new building they ventilate the building, but do not attempt originally to ventilate the equipment. In other words, they put ventilation for heat removal due to roof heat, etc., and other needs inherent in the building itself in all new buildings but do not arrange for ventilation for operations inside the building. They arrange for this latter type of ventilation by hoods, fans, gravity ventilators, flues or whatever is necessary to take care of the individual problem, when the equipment is installed and in operation.

This is much more practical than trying to ventilate an entire building before equipment is in operation. This latter scheme would call for the dilution method, which at best is only 50 per cent efficient. Incidentally, Mr. Nipher groups equipment where it is most convenient for getting out the product. In other words, he doesn't attempt to have all of his forges in one group, all of his polishers in another group, etc.

The company's policy is to ventilate with ventilators and use sash only for light. They have found that sash ventilation is not satisfactory, being too haphazard, too indefinite and too uncontrolled. They are now working progressively toward complete plant ventilation worked out problem by problem for each group of equipment, and handled with roof ventilators of a gravity type as far as possible.

A word regarding Mr. Nipher's plans for rearranging of equipment in this building will be interesting, not only on account of the principles of heat removal which it brings out, but because it is an example of the good ideas that a ventilating engineer may pick up from plant operators. His plan is to group all of his furnaces in the center of the room with a large hood extending from the roof down as far as manufacturing operations will permit. This hood, which will be capped with ventilators at the roof, will confine the heat above and will also baffle or screen the heat from the workers, cutting down the introduction of heat by direct radiation. Fresh air will be brought in on all sides making possible an effective recirculating layout for blowing fresh air directly on the workers. This arrangement will eliminate the necessity of bringing fresh air down from overhead to keep from drawing it across heat producing equipment.

Ventilation for Chicken Houses

SOME days ago we received a letter from C. R. Bloom, of Jonesboro, Indiana, asking for information on ventilating chicken houses. He wanted to know the number of changes of air per hen per hour required under normal conditions. The house was not heated. He had in mind using an ordinary gravity ventilator.

In reply to this request Paul R. Jordan of the Paul R. Jordan Company, Indianapolis, manufacturers of ventilators sent the following reply:

"Ventilation of stock buildings in the winter is dependent on the amount of stock housed. In the summer it is primarily heat removal. For the average building eight changes of air per hour will be about right.

"For an unheated building a positive type ventilator should be used, preferably a rotary. The rotary ventilator can be estimated on the basis of flue velocity of 300 feet per minute. For an average storm band type ventilator on an unheated building, velocities would be so low I would not care to estimate them at anything."

THE EREHART HOUSE

(Continued from page 27)

is a number 226 Majestic placed in a square casing. There were two reasons for the square casing; one was to make the furnace room as small as possible and the other was appearance. The casing is galvanized iron with the angle iron frame painted in contrasting color for appearance. The furnace is of the down draft type with a grate area of 397 square inches.

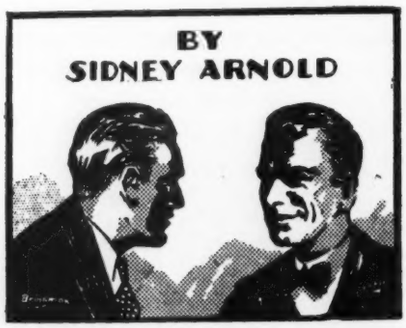
The heating element is oil, burned in a Williams Oil-O-Matic burner. The burner is connected to a room thermostat and an outside tank. The operation of the burner is intermittant, the burner coming on and shutting off with the demands from the first floor thermostat.

The system was planned to make use of a fan. The design called for four changes of air per hour throughout the house. This means that 830 cubic feet of air per minute had to be introduced into the house by the fan. A Miles fan with a capacity of 1600 cubic feet per minute was used which was considerably above the required capacity. One advantage of this extra capacity is that the plant is never taxed to keep the temperature up regardless of the severity of the outside weather and the fan can operate at low speed.

The plant is also complete with such accessories as automatic humidification so that the owner does not have to worry about filling a water pan. The fan is controlled by a thermostat placed in the bonnet of the furnace and can cut in and out whether the burner is operating or not. This permits stored heat of the furnace to be blown into the house when the burner is off, but the temperature in the furnace rising. Filters are also used to insure clean air.

It is worth noting that the system has proved successful in all respects.

RANDOM NOTES AND SKETCHES



The other day I was up in Wisconsin. No, I wasn't looking for fish—but for stories. And I ran onto a dandy.

Some years ago this particular heating man specialized in furnace work. He couldn't make enough profit. Along came a chance to sell oil burners and he took a chance. Today he has installed dozens and dozens of oil burners in furnaces and boilers and every one of the jobs was done at a substantial profit.

Since he started to put in burners he has seen numerous oil burner agencies come and go in his town.

The story I speak of is the answer to the queston—Why?

I'll let you in on this much of the story—it's right installation.

He says most oil burner agency men are salesmen. They know little about heating plants and very little about furnaces in particular. Most oil burner agencies have sidestepped the furnace. But this man I speak of knows furnace heating from clean-out door to second floor register. He won't take a job unless he has an agreement permitting him to see that the furnace works right on coal. Then he has every part of the installation made for the job—not stock to order—and the result is he is in demand to service other installations which don't work right.

I think there is a lot to be thought over in this. I am going to run a story about it.

* * *

Tch, Tch, Tch!

Mrs. Gleeson (at seaside concert)—"She has quite a large repertoire, hasn't she?"

Gleeson—"Yes, and that dress makes it look all the worse."

You know I get a big kick out of traveling around the country visiting furnace dealers and sheet metal contractors. There are so darned many new ideas and situations always begging to be looked into.

For instance. Up in the northern part of the Middle West in one of the big cities there is a furnace organization that even in times like this summer is putting in several hundred furnaces. The business is about fifty-fifty new houses and replacements. You have got to admit that it takes SOME organization to sell several hundred furnaces these days.

When I called on this organization I knew there must be something behind such success. It just couldn't be blind luck.

And it wasn't.

There is a bit more to the story, though. In this community there is a city code. A furnace man can't base too much of his selling talk on better installations. He has to have something different.

The secret of this firm's success is an accessory. A humidifier, to be exact. Their sales force has broken into deal after deal with the humidifier and walked away with the bacon. It has meant sales to owners who were perfectly satisfied with their plant till they saw the accessory. Then they wanted it put on their furnace.

And that operation requiring some change in the casing gave the firm its opportunity to make replacements in the furnace, do repair work and in many, many instances sell a modern furnace.

Think that one over.

* * *

And How!

A young bride walked into a drug store and approached a clerk timidly.

"The baby tonic you advertise—" she began—"does it really make bigger and stronger babies?"

"We sell a lot of it," replied the druggist, "and we've never had a complaint."

"Well, I'll take a bottle," said the bride after a moment, and went out.

In five minutes she was back. She got the druggist into a corner and whispered into his ear—

"I forgot to ask about this baby tonic," she said under her breath.

"Who takes it—me or my husband?"—*Patton's Monthly.*

* * *

Knew Where to Look

The deceased furnace installer knocked at the gates of Hell and demanded admittance.

"What do you want here?" asked Satan.

"I want to collect from several of my customers who died before I did," was his response.

"How do you know they're here?" asked Satan.

'Well, they told me to come here every time I tried to collect."

How Much Will Lead Expand?

From a Subscriber:

How much will a sheet of lead 4 lbs. to the square foot 30"x96" expand in length—the extreme heat being 115°, the extreme cold 20° below zero?

Readers: Please send in your replies.

Combination Punch and Shear

From G. O. Crouch and Son, Chattanooga, Tennessee.

Where can I secure a combination punch and shear to cut ¼-inch flat bar iron?

Ans. — Bertsch & Company, Cambridge City, Indiana; Interstate Machinery Company, 601 West Monroe Street, Chicago, and Jos. T. Ryerson & Son, 2558 West 16th Street, Chicago.

Addresses of Beckwith Company and Bibb Stove Company

From E. C. Stecker, 2511 Main Street, Columbia, South Carolina.

Please give me the address of Beckwith Company, makers of "Round Oak" furnaces, also of Bibb Stove Company, makers of "Bibb's Sanitary Furnaces."

Ans.—1. Dowagiac, Michigan. 2. Baltimore, Maryland.

Automatic Louvres

From A. G. Schroeder, Ironwood, Michigan.

Who makes aluminum louvre back draft dampers as manufactured by the American Warming and Ventilating Company? Where is this firm located? Is there any other firm making them?

Ans.—American Warming and Ventilating Company, Toledo, Ohio, and American Foundry and Furnace Company, Bloomington, Illinois.

"Reed" Air Filter

From George W. Barnes, Vassar, Michigan.

Please tell me who makes the "Reed" Air Filter for warm air furnaces.

Answ. — American Air Filter Company, Inc., First and Central Avenue, Louisville, Kentucky.

Repairs for "Mola" Electric Washing Machine

From Carlton Hardware Company, Carlton, Minnesota.

Where can we buy repairs for the "Mola" electric washing machine which was made by the Modern Laundry Machine Company of Kansas City, now out of business?

Ans. — Birtman Electric Company, 4140 Fullerton Avenue, Chicago, manufacture repair parts for this machine.

Underfeed Furnace

From West End Heating Company, 126 Boulevard of the Allies, Pittsburgh, Pa.

Can you tell us who makes an underfeed furnace that will burn slack?

Ans.—The Williamson Heater Company, Cincinnati, Ohio.

Cast Iron Smoke Pipe

From Joseph Tumpach, 2431 South Kedzie Avenue, Chicago, Illinois.

Will you please tell me who makes cast iron smoke pipe.

Ans.—The Waterloo Register Company, Waterloo, Iowa, and Faultless Castings Company, Brazil, Indiana.

Canvas Roofing

From Hoffman's Tin Shop, New Buffalo, Michigan.

Who manufactures canvas roofing?

Ans.—The Lehon Company, W. 44th and S. Oakley Avenue, Chicago, Illinois.

Mushroom Ventilators

From Commercial Sheet Metal Works, 1611 North Western Avenue, Chicago.

Please tell us who makes mushroom ventilators for theatres.

Ans.—Aeolus Dickinson Company, 3334 South Artesian Avenue, and Ventilating Products Company, 2400 Cottage Grove Avenue; both of Chicago.

Horizontal Furnaces

From H. M. Tovar Company, Port Huron, Michigan.

Please tell us who makes horizontal furnaces.

Ans.—American Foundry and Furnace Company, P. H. Magirl Foundry and Furnace Works, Bloomington, Illinois; L. J. Mueller Furnace Company, Milwaukee, Wisconsin; XXth Century Heating and Ventilating Company, Akron, Ohio, and Moncrief Furnace Company, Atlanta, Georgia.

"National Improved Airtight" Furnace

From Joseph V. Mettelka & Son, corner Chestnut and South Depot Streets, Marshfield, Wisconsin.

Can you give us the name and address of the manufacturers of the "National Improved Airtight" furnace?

Ans.—P. H. Magirl Foundry and Furnace Works, Bloomington, Illinois.

"Cary" Furnace

From Rueben Anderson, 7203 South Ashland Avenue, Chicago.

Please tell me who makes the "Cary" furnace for oil and gas.

Ans.—Cary Manufacturing Company, Waupaca, Wisconsin. It is handled in Chicago by the Modern Refrigeration and Heating Company, 9457 South Ashland Avenue.

Asbestos Insulating Paint in Colors

From George W. Barnes, Vassar, Michigan.

Who makes asbestos insulating paint in colors?

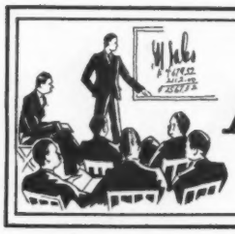
Ans.—Technical Products Company, 116 Sheridan Square, Pittsburgh, Pa.

"Cortright" Metal Shingles

From W. J. Kinball, 1836 Curve Street, South Carolina.

Please tell me who manufactures "Cortright" metal shingles.

Ans.—Cortright Metal Roofing Company, Philadelphia, Pennsylvania.



ASSOCIATION ACTIVITIES

Milwaukee Wins Picnic Ball Game

THIS year the ball game feature of the Wisconsin Sheet Metal Contractors' picnic was a serious as well as delightfully entertaining part of a fine day's outing. The reason for this seriousness of the game lies in the fact that the Chicago boys came to this year's outing which was held on Wednesday, July 30, on Wulf's Island, fourteen miles north of Milwaukee on the Wisconsin River.

The Milwaukee local kindly and sincerely invited their Chicago brethren to be their guests and the invitation was gladly accepted by thirty-one members of the Chicago Sheet Metal Contractors' Association. Led by their president, George Krutzkoff, they traveled by private railway car and chartered bus to the scene of the frolic.

But there was a sinister purpose behind this invitation and it all came out during the chicken dinner when Paul Biersach read excerpts from the late Harry Dettmers' report of a similar ball game played way back in the year 1921.

That summer Milwaukee beat Chicago 7 to 1 and Paul graciously said that this occasion was Chicago's turn to win. In response to this friendly challenge, President George Krutzkoff spoke for the Chicago team. He regretted that the regular Chicago team was under contract to play Hammond that very day, but that Chicago's second team was on hand to do battle. Some rash boys from Milwaukee cried out "Alibi" —and who knows?

To get the players in fine fighting trim and the loyal rooters feeling cheery there was much concertina music and community singing. John Shean played the piano and Wm. Poser did some old fashioned jigging.

After a leisurely stroll over the bridge to the island and a brief rest at the refreshment stand, presided over by Brothers Pluckman and Green, the boys got busy with the ball game.

H. R. Eschenberg was the captain of the Milwaukee team and L. Rysdon lead the Chicago boys on the field.

Umpires were Bill Hamman for Milwaukee and Frank Voightman for Chicago.

The line-ups:

MILWAUKEE

Wilbert, second base.
Schmeling, right field.
Melius, third base.
Duce, left field.
Kuhns, first base.
Osmanski, pitcher.
Meyer, shortstop.
Tolg, center field.
Rice, catcher.

CHICAGO

Meyers, first base.
Robinson, right field.
L. Rysdon, center field.
Thomson, left field.
Junge, shortstop.
Jensen, third base.
Norris, catcher.
Lensing, second base.
F. Rysdon, pitcher.

It must be said for President Krutzkoff and Johnny Maier of Chicago that they tried hard to instill fighting spirit into their team and rooters. They stuck to the sidelines throughout the game and quite occasionally baited the umpires to the limit. They were

Left, K. Hirsch, George Bishop, Paul Biersach, Fred Rysdon, Johnny Maier and George Krutzkoff. Right, John Thomson knocking out one of his two-baggers

Left, the boys oblige the camera man. Right. The Chicago delegation—five other Windy City boys were elsewhere on the grounds at the time

out to have Chicago win. It was a close game for several innings and each play was a comedy sketch worthy of any vaudeville stage. Cecil Tolg played all over the outfield and infield for Milwaukee. Several of his catches were in other players' territory and in two instances he took the ball right out of his teammates' hands. However, one of these plays resulted in a surprise double play because Cecil shot the ball to first base and caught a sleeping Chicago player.

This was in direct contrast to the team work of the Chicago players, who twice let the ball fall in fair territory untouched as each waited for the other to make the catch.

John Thomson was the star performer and laugh maker for the Chicago boys. In going back for a ball over his head he executed the neatest, prettiest back jack knife dive ever seen on dry land. To explain this it must be stated that surrounding the entire outfield runs a ditch which is almost large and deep enough to be called a ravine and John's first dive was not his last.

The game ended 29 to 18 in favor of Milwaukee in spite of a last inning rally on the part of the Chicago team that brought visions of victory for the big town rooters.

One hundred and ten men attended this splendid outing. Everybody had a good time and many were heard to say it was the best outing Wisconsin ever held. Members of the Association came from all points of the state. George Bishop traveled the farthest, coming all the way from his home in Marinette, some 185 miles away. H. J. Kuch of the Standard Sheet Metal Works of Miami, Florida, was also present as a guest of Johnny Maier of Chicago Heights. Johnny did not forget about the "big book" even if this was a holiday, so he button-holed Mr. Kuch on the train and sold him a copy of "Standard Practice in Sheet Metal Work" to take back to Florida with him.

Lafayette District, Indiana, Holds Peppy Meeting

The District Meeting at Lafayette was a very snappy and entertaining affair with a large attendance of representatives from all branches of the sheet metal and furnace trade. The crowd enjoyed a fish dinner and special entertainment furnished by the Lafayette local association.

After a few words of welcome by Louis Lehnen, District Governor of the Lafayette District and principal promoter of the affair, during which remarks Louis admitted it was the best District Meeting ever held anywhere, the meeting was turned over to Harry Beaman, first vice-president of the State Association and chairman of the Board of Governors. Beaman called on several of the guests for short talks and got universally fitting responses.

Among these were Prof. J. D. Hoffman of Purdue University, who is chairman of the Standard Code Committee of the National Warm Air Heating Association, State Representatives J. Frank Smith and Roy C. Street, T. H. Maddox of Tuttle & Bailey Mfg. Co., Chicago, and Jos. C. Gardner, Treasurer of the National Sheet Metal Contractors Association.

Prof. Hoffman outlined the possibilities of a short three-day school for sheet metal and furnace men such as is offered to business groups of Indiana by the state through their state school, Purdue University. This was later amplified by Representative Street.

Jos. C. Gardner reported briefly the National Convention recently held at Pittsburgh. Representative Smith made an entertaining talk about legislation in which he kidded everybody concerned, but which nevertheless brought out the point that you don't get anything out of the legislature without asking for it. The talk left the assemblage full of the determination to do some organized asking.

Mr. Maddox dwelt on the advisability and possibility of sales effort of registers.

The next District Meeting will be the picnic at Indianapolis. Indianapolis representatives present invited everybody to come. D. L. Swisher, Governor of the Richmond District, took the floor a minute to call attention to the Richmond meeting scheduled for August 29th, and Frank DeWeese, Governor of the Fort Wayne District spoke enthusiastically about plans for the State Convention at Fort Wayne next January.

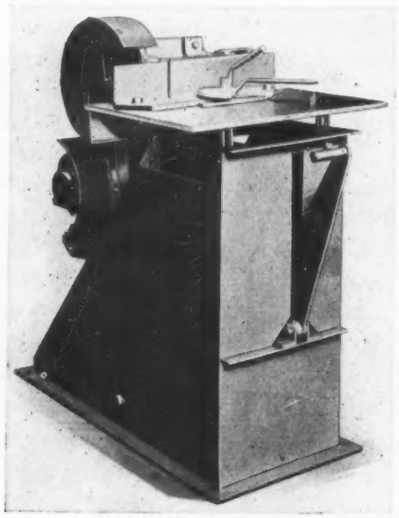
NEW ITEMS *and* NEWS ITEMS
From and about the Manufacturers and Jobbers

New Ryerson High Speed Cut-Off Saw

The No. 00 High Speed Cut-Off Saw is the latest addition to the Ryerson Line of High Speed Metal Cutting Saws. It is the smallest unit now offered.

A small, light machine, low in price, for cutting light gauge steel moulding and small shapes of non-ferrous material such as brass, copper, aluminum, etc.

Solid steel sections from ¼ to ⅜-inch round or square can be cut with the regular toothed



blade. Sections slightly larger can be cut with the abrasive disc. Any aluminum or brass sections that will fit into the work table are quickly and easily cut.

No water or other coolant is required. The entire unit is built into a rugged frame made of welded structural steel. The blade is mounted on an arbor carried by two heavy double row self-aligning ball bearings. Arbor is driven by a triple V-belt and 3-h.p. motor. The table is adjustable up and down in order to obtain the most efficient cutting conditions for the blade. A convenient quick operating clamp is provided for clamping any shapes while cutting. A hand lever eccentric moves the rear barrier toward the front, holding the stock tight against the front barrier. The entire clamp may be set any angle up to 45 degrees for miter cutting. Guards completely enclose blade and V-belt drive.

Complete description may be had by writing Joseph T. Ryerson & Son, Inc., 16th and Rockwell Streets, Chicago, Illinois.

Silent Automatic Corp. Has New Burner for Small Homes

A new type of oil burner known as the Model E for smaller homes has just been brought out by Silent Automatic Corporation of Detroit. The three years' research and experimentation necessary for the perfection of this device resulted in unusual coordination of design, engineering skill and manufacturing facilities, the company claims.

The Model E is built for round and rectangular boilers and furnaces.

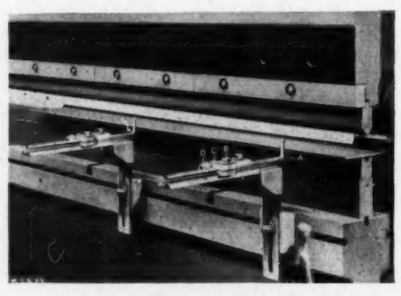
Specifications follow:

Burner limits: For round boilers and furnaces the minimum diameter at the grate line is 11½ inches; the maximum is 19 inches. When used in rectangular boilers and furnaces, the width limits at the grate line range from 11½ to 19 inches, with a maximum grate area of three square feet. The greatest ratio of grate length to width is two to one. Maximum load limits for steam is 350 square feet and for water, 560 square feet. The connected load equals standing radiation plus piping losses. Maximum oil flow is 1½ gallons per hour.

The electric motor is less than 1/30 h.p. The automatic heat controls are of a simple and efficient type.

Cincinnati Universal Gauges With Micrometer Adjustment Now on the Market

The Cincinnati Shaper Company, Elam Street and Garrard Avenue, Cincinnati, Ohio, manufacturers of



the Cincinnati Universal Gauges, have placed on the market universal gauges with micrometer adjustment. The company says—"As far as we know, these are the only gauges for Press Brakes being offered as a standard item. Gauges of this type are usually made up special to meet definite requirements."

Horizontal gauge rod "A" can

be quickly moved to the approximate gauging position and clamped in place with cap screw "B." Final adjustment is then made with micrometer nut "C" and lock nut "D."

The gauges can be set for forming wide or narrow sheets either upward or downward. They can also be used as an adjustable two-step gauge for making both bends of a channel successively with only one handling of the sheet.

Lorin W. Smith Appointed Sales Promotion Engineer, Combustioneer, Inc.

Combustioneer, Inc., Goshen, Indiana, manufacturers of the Com-

bustioneer Automatic Coal Burner for all types of heating plants—warm air, hot water, vapor and steam; as well as for boilers up to 200 hp. for industrial plants, announces the appointment of Mr. Lorin W. Smith, Jr., as sales promotion manager.

For several years Mr. Smith has been associated with the different branches of the heating industry, the last three years he has been connected with the Minneapolis Honeywell Regulator Company of Minneapolis, Minnesota, in charge of Jewell Sales Promotion.

Mr. Smith has gained national recognition through his work with the coal and allied industries, and has been an important factor in the awakening of these different industries to the fact that the era of automatic heating is not only here, but is here to stay, and that new methods for the merchandising of automatic heating must be used.

Mr. Smith's most recent contribution to these industries has been his activity in the formation of the committee of ten—coal and heating industries—the object of which committee is to serve the public more efficiently by promoting heating satisfaction with solid fuels. Mr. Smith is secretary of this committee.

Effective August first, Mr. Smith will take up his new duties as sales promotion manager of Combustioneer, Inc., at Goshen, Indiana.

Schwab Furnace & Mfg. Co. to Take Over Manufacture of "Gilt-Edge" Furnaces

"Gilt Edge" furnaces, manufactured by R. J. Schwab & Sons Company of Milwaukee, will be manufactured by a newly organized corporation, Schwab Furnace & Mfg. Company. In order to provide for further expansion, the new company has purchased the site and plant at Cedar Grove, Wisconsin, formerly occupied by the Cedar Grove Stove Works, comprising about four acres. Contracts have been let and work is progressing on the erection of a fireproof, modern, foundry building, and the plant will be thoroughly modernized. It is expected that the new plant will be in operation some time in August.

The officers of the new company are Henry E. Schwab, president; Charles E. Schwab, vice-president, and Mark P. Ohlsen, secretary and treasurer. Mark P. Ohlsen is well known in the heating trade and has been for twenty-eight years with the Brillion Iron Works. The directors, in addition to the officers, are William B. Strong, vice-president and general manager of the Milwaukee Drug Company and a director of the Marine National Bank of Milwaukee, and D. W. Huenink, cashier of the Citizens State Bank of Sheboygan.

Alfred G. Pomrening, who has been associated with the Schwab company for many years, will continue as sales manager of the Milwaukee district, and will maintain a display room, office, and warehouse in Milwaukee.

R. J. Schwab, who established the business in 1876, retired several years ago and now resides in Miami, Florida. He started the business in Milwaukee in a little foundry on the corner of Clinton and Park Streets. Attracted by the possibilities in the field of warm air heating, Mr. Schwab commenced making cast iron furnaces and sold them under the brand name of "Gilt Edge," as signifying the high quality built into them.

The new corporation has begun with the idea of making the trade name "Gilt Edge" fit the new product as it did the old. The Schwab Furnace and Mfg. Company is now in the fifty-fifth year of uninterrupted operation.

International Nickel Develops New Monel Metal Finish

A new Monel Metal Finish, designated as No. 8, has been developed by the Huntington Mill of the International Nickel Company to replace those finishes formerly known as No. 3 and No. 4.

It has a silver satin appearance with more lustre than both of the latter, but without the high reflectivity of the full finished No. 5. It was developed to eliminate the need on the part of fabricators for further polishing of their products after manufacturing operations are completed.

The No. 8 is more attractive in appearance than the two finishes which it replaces. It can also be used instead of No. 5 for some purposes.

~ MARKET QUOTATIONS ~

AMERICAN ARTISAN is the only publication quoting Prices on Metals, Sheet Metal Equipment and Supplies, Warm Air Heating Supplies and Accessories, corrected bi-weekly. These quotations are not guaranteed but are obtained from reliable sources and reflect nation-wide market conditions at the time of going to press.

NOTE—These prices are Chicago Warehouse Prices to which must be added territory differentials

METALS

PIG IRON

Chicago Fdy., No. 2	$17.50 to $18.00
Southern Fdy. No. 2	18.01
Lake Superior Charcoal	27.04
Malleable	17.50 to 18.00

FIRST QUALITY BRIGHT CHARCOAL TIN PLATES

IC	20x28	112 sheets	$22.50
IX	20x28		25.50
IXX	20x28	56 sheets	14.50
IXXX	20x28		15.50
IXXXX	20x28		17.00

TERNE PLATES

	Per Box
IC 20x28, 40-lb. 112 sheets	$24.00
IX 20x28, 40-lb. 112 sheets	26.50
IC 20x28, 25-lb. 112 sheets	20.50
IX 20x28, 25-lb. 112 sheets	23.50
IC 20x28, 20-lb. 112 sheets	19.00
IV 20x28, 20-lb. 112 sheets	22.00

"ARMCO" INGOT IRON PLATES

No. 8 ga.—110 lbs.	$4.15
3/16 in.—100 lbs.	4.05
¼ in.—100 lbs.	3.85

COKE PLATES

Cokes, 80 lbs., base, 20x28	$12.00
Cokes, 90 lbs., base, 20x28	12.20
Cokes, 100 lbs., base, 20x28	13.75
Cokes, 107 lbs., base, IC, 20x28	12.75
Cokes, 135 lbs., base, IX, 20x28	14.75
Cokes, 155 lbs., base, 2X, 56 sheets	8.50
Cokes, 175 lbs., base, 3X, 56 sheets	9.35
Cokes, 195 lbs., base, 4X, 56 sheets	10.25

BLUE ANNEALED SHEETS

Base 10 ga.	per 100 lbs.	$3.35
"Armco" 10 ga.	per 100 lbs.	4.15

ONE PASS COLD ROLLED BLACK

No. 18-20	per 100 lbs.	$3.75
No. 22	per 100 lbs.	3.70
No. 24	per 100 lbs.	3.75
No. 26	per 100 lbs.	3.85
No. 27	per 100 lbs.	3.90
No. 28	per 100 lbs.	4.00

GALVANIZED

No. 16	per 100 lbs.	$3.85
No. 18	per 100 lbs.	3.95
No. 20	per 100 lbs.	4.15
No. 22	per 100 lbs.	4.20
(Standard differentials on extras to apply)		
No. 24	per 100 lbs.	$4.35
No. 26	per 100 lbs.	4.60
No. 27	per 100 lbs.	4.70
No. 28	per 100 lbs.	4.85
"Armco" 24	per 100 lbs.	5.95

BAR SOLDER

Warranted 50-50	per 100 lbs.	$21.05
45-55	per 100 lbs.	19.75
48-52	per 100 lbs.	20.05
Plumbers'	per 100 lbs.	17.40

ZINC

In Slabs	$5.50

SHEET ZINC

Cask Lots (600 lbs.)	$12.00
Sheet Lots (100 lbs.)	13.00

BRASS

Sheets, Chicago base	17¾c
Tubing, brazed, Chicago base	25¾c
Tubing, seamless, Chicago base	22¾
Wire, Chicago base	18¾c
Rods, Chicago base	16⅛c

COPPER

Sheets, Chicago base	20¾c
Tubing, seamless, Chicago base	23 c
Wire, plain rd., 8 B. & S. Ga. and heavier	13⅛c

LEAD

American Pig	$6.50
Bar	8.50

TIN

Bar Tin	per 100 lbs.	$39.00
Pig Tin	per 100 lbs.	38.00

SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES

ASBESTOS

Paper up to 1/16	6c per lb.
Roll board	7½c per lb.
Mill board 3/32 to ½	7½c per lb.
Corrugated paper (250 sq. ft. per roll)	$6.00 per roll

ASBESTOS SEGMENTS

8 in.	per 100 sets	$7.30
9 in.	per 100 sets	8.30
10 in.	per 100 sets	9.30
12 in.	per 100 sets	10.50

CEMENT FURNACE

American Seal, 5-lb. cans, net	$0.40
American Seal, 10-lb. cans, net	0.80
American Seal, 25-lb. cans, net	2.00
Pecora	per 100 lbs. 7.50

CLIPS

Damper

No-Rvet Steel, with tail pieces, per gross	$9.50
Rivet Steel, with tail pieces, per gross	7.50
Tail pieces, per gross	2.40

COPPER FOOTING

Copper Footing	36%

CORNICE BRAKES

Chicago Steel Bending

Nos. 1 to 6B	Net

CUT-OFFS

Cal., plain, round or cor. rd.

26 gauge	30%
28 gauge	35%

DAMPERS

Yankee Hot Air

7 inch, doz.	$1.60
8 inch, doz.	2.20
9 inch, doz.	2.60
10 inch, doz.	2.80
12 inch, doz.	3.50
14 inch, doz.	5.00

EAVES TROUGH

Galv. Crimpedge, crated	75-10%
Zinc, "Barnes"	60%

ELBOWS

Conductor Pipe

Galv. plain or corrugated, round flat Crimp.

28 gauge	60%
26 gauge	45%
24 gauge	15%

Galv. Terne Steel

Plain Rd. and Rd. Corr.

28 gauge	60%
26 gauge	45%
24 gauge	15%

Square Corrugated

28 gauge	50%
26 gauge	35%

Portico Elbows

Standard Gauge Conductor Pipe, plain or corrugated.

Not nested	70 & 5%
Nested solid	70 & 5%

Sq. Corr., A. & B. & Octagon

28 gauge	50%
26 gauge	35%

Portico

1, 1¼, 1½ inch	45%

Copper

16 oz. all designs	45%

Zinc

All styles	60%

ELBOWS—Stove Pipe

1-piece Corrugated, Uniform Blue "Milcor" No. 28 Gauge.	Doz.
5 inch	$1.15
6 inch	1.25
7 inch	1.75

Adjustable—Uniform Blue

"Milcor" No. 28 Gauge, Uniform Blue.	
5 inch	$1.60
6 inch	1.75
7 inch	2.10

WOOD FACES—60% off list.

FIRE POTS

Geo. W. Diener Mfg. Co.

	Each
No. 02 Gasoline Torch, 1 qt.	$5.13
No. 9250, Kerosene, or Gasoline Torch, 1 qt.	6.50
No. 10 Tinner's Furnace Square tank, 1 gal.	11.20
No. 15 Tinner's Furnace Round tank, 1 gal.	10.70
No. 21 Gas Soldering Furnace	8.00
No. 110 Automatic Gas Soldering Furnace	10.50

GLASS

Single and Double Strength, A, all brackets	85%
Single and Double Strength, B, all brackets	87%

HANGERS

Conductor Pipe

Milcor Perfection Wire	25%
Milcor Triplex Wire	10%

Eaves Trough

Milcor Steel (galv. after forming) from list	45%
Milcor Selflock E. T. Wire, List	10%

HOOKS

Conductor

"Direct Drive" Wrought Iron for wood or brick	15%

MITRES

Galvanized Steel Mitres

28 gauge	70
26 gauge	60-20

PASTE

Asbestos Dry Paste

200-lb. barrel	$15.00
100-lb. barrel	7.75
50-lb. pail	4.50
25-lb. pail	2.50
10-lb. bag	1.20
5-lb. bag	0.60

PIPE

Galvanized

Crated and nested (all gauges)	75-7½%
Crated and not nested (all gauges)	75-2½%

Furnace Pipe

Double Wall Pipe and Fittings	70%
Single Wall Pipe, Round Galvanized Pipe	70%
Galvanized and Tin Fittings	70%

Lead

Per 100 lbs.	$12.50

Stove Pipe
"Milcor" "Titelock" Uniform Blue Stove

28 gauge, 5 inch U. C. nested	$11.00
28 gauge, 6 inch U. C. nested	12.00
28 gauge, 7 inch U. C. nested	14.00
30 gauge, 5 inch U. C. nested	10.25
30 gauge, 6 inch U. C. nested	11.00
30 gauge, 7 inch U. C. nested	13.00

T-Joint Made Up

6 inch, 28 ga.	per doz. $3.40

REGISTERS AND FACES

Floor Registers

Except Cast Iron	40 & 10%
Cast Iron	20%

Baseboard

2-Piece	40 & 10%
1-Piece	40-10 & 20%

Adjustable Ventilators

Adjustable Cold Air Faces	40 & 10%
Adjustable Ventilators	40 & 10%

RIDGE ROLL

Galv. Plain Ridge Roll, b'dld	75-15-5%
Galv., Plain Ridge Roll, crated	75-15%

SCREWS

Sheet Metal

7, ½x⅛, per gross	$0.52
No. 10, ¼x3/16, per gross	0.68
No. 14, ⅜x¼, per gross	0.83

SHEARS, TINNERS' AND MACHINISTS'

Viking	$22.00

Lennox Throatless

No. 18	35%
Shear blades (f. o. b. Marshalltown, Iowa.)	10%

SHOES

Galv. 28 Gauge, Plain or Corrugated, round flat crimp	60%
26 gauge, round flat crimp	45%
24 gauge, round flat crimp	15%

SNIPS, TINNERS'

Milcor	Net

VENTILATORS

Standard	30 to 40%
Milcor	Net

Larger Bearing Surface

HYRO UNXLD DAMPER QUADRANT

Redesigned Frame

Malleable Iron Handle

THE damper regulator is just as important on a heating or ventilating job as the throttle on an automobile. If it works loose, doesn't show the position of the damper from the outside—in short, if it doesn't control the passage of air accurately—it is a reflection upon your skill and a handicap to your profits.

Avoid damper kicks by installing Hyro UNXLD Damper Quadrants on every job. Architects, heating and ventilating engineers, contractors—all who have anything to do with dampers—agree that the Hyro UNXLD is the best damper trouble insurance.

Hyro UNXLD Damper Quadrants are built *right*. The malleable iron handle can be locked in any position on the indicating scale by a twist of a wing nut. The carefully made frame, designed for a maximum of strength and a minimum of weight, is installed with equal ease on both flat and curved surfaces.

UNXLD comes in five sizes to take care of the smallest as well as the biggest jobs. For further details and prices send in the coupon.

HYRO MAKES A COMPLETE LINE OF OTHER DAMPER ACCESSORIES

ALSO

No. OX METAL PUNCH

A small, strong punch for 14 gauge sheet metal and lighter. Measures 8" over all and weighs 2⅝ lbs. The most powerful punch of its size.

SHUR-GRIP

SOLDER IRON HANDLE

This is the *different* solder iron handle. It *screws* on, cutting its own thread on the stem of the solder iron.

Can't split or come off. Has an air vent that prevents heating and scorching.

HYRO MFG. CO., Inc.
202 VARICK STREET
New York City

Mail this coupon today for prices and full information

Hyro Manufacturing Company, Inc. 8-30
202 Varick Street, New York City.
Please send me prices and details about
(Please check)
Damper Accessories ☐
Metal Punches ☐
Shur-Grip Handles ☐
All Products ☐

Name.....
Address.....
City.....
State.....

Mention AMERICAN ARTISAN in your reply—Thank you!

BUYERS' DIRECTORY

Air Cleaners
Meyer & Bro. Co., F., Peoria, Ill.

Aluminum Sheets
J. M. & L. A. Osborn Co., Cleveland, Ohio

Blast Gates
Berger Bros. Co., Philadelphia, Pa.

Blowers—Furnace
American Machine Products Co., Marshalltown, Iowa
Brundage Co., Kalamazoo, Mich.
Lakeside Co., Hermansville, Mich.

Bolts—Stove
Lamson & Sessions Co., Cleveland, Ohio
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Brakes—Bending
Dreis & Krump Mfg. Co., Chicago, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Brakes—Cornice
Dreis & Krump Mfg. Co., Chicago, Ill.

Brass and Copper
American Brass Co., Waterbury, Conn.
Chase Brass & Copper Co., Waterbury, Conn.
Copper & Brass Research Association, New York, N. Y.
Revere Copper & Brass, Rome, N. Y.

Bronze
Revere Copper & Brass, Rome, N. Y.

Cans—Garbage
Diener Mfg. Co., G. W., Chicago, Ill.
Osborn Co., The J. M. & L. A., Cleveland, Ohio

Castings—Malleable
Fanner Mfg. Co., Cleveland, Ohio

Ceilings—Metal
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Chaplets
Fanner Mfg. Co., Cleveland, Ohio

Cleaners—Vacuum
Brillion Furnace Co., Brillion, Wis.
National Super Service Co., Toledo, Ohio

Copper
American Brass Co., Waterbury, Conn.
Chase Brass & Copper Co., Waterbury, Conn.
Revere Copper & Brass, Rome, N. Y.
Rockford Sheet Steel Co., Rockford, Ill.

Cornices
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Cut-offs—Rain Water
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Dampers—Quadrants—Accessories
Hart & Cooley Co., Holland, Mich.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Parker-Kalon Corp., New York, N. Y.

Dampproofings
Lastik Products Corp., Pittsburgh, Pa.

Damper Regulators
Sheer Co., H. M., Quincy, Ill.

Diffuser—Air Duct
Aeolus-Dickinson Co., Chicago, Ill.

Drills—Electric
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
J. M. & L. A. Osborn Co., Cleveland, Ohio
The Stanley Electric Tool Co., New Britain, Conn.

Drive Screws—Hardened Metallic
Parker-Kalon Corp., 200 Varick St., New York

Dust Eliminator
Dustless Ash Co., Muskegon, Mich.

Eaves Trough
Barnes Metal Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Rockford Sheet Steel Co., Rockford, Ill.

Elbow and Shoes—Conductor
Apex Gutter Hanger Corp., New York, N. Y.
Barnes Metal Products Co., Chicago, Ill.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Rockford Sheet Steel Co., Rockford, Ill.

Fittings—Conductor
Barnes Metal Products Co., Chicago, Ill.
Braden Mfg. Co., Terre Haute, Ind.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Fluxes—Soldering
Kester Soldering Co., Chicago, Ill.

Furnace Cement
Connors Paint Mfg. Co., Wm., Troy, N. Y.
Lastik Products Corp., Pittsburgh, Pa.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Furnace Chain
Hart & Cooley Co., Holland, Mich.

Furnace Cleaners—Suction
Brillion Furnace Co., Brillion, Wis.
National Super Service Co., Toledo, Ohio

Furnace Fans
A-C Mfg. Co., Pontiac, Ill.
Brundage Co., The, Kalamazoo, Mich.
Lakeside Co., Hermansville, Mich.
Robinson Co., A. H. Massillon, Ohio

Furnace Paste
Western Mineral Products Co., Omaha, Neb.

Furnace Pokers
Fanner Mfg. Co. Cleveland, Ohio

Furnace Pulleys
Hart & Cooley Co., Holland, Mich.

Furnace Regulators
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Sheer Co., H. M., Quincy, Ill.
White Mfg. Co., Minneapolis, Minn.

Furnace Rings
Forest City-Walworth Run Foundries Co., Cleveland, Ohio
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Furnace Switch—Automatic
Payne Furnace & Supply Co., Beverly Hills, Cal.
Robinson Co., A. H., Massillon, Ohio

Furnaces—Gas
Payne Furnace & Supply Co., Beverly Hills, Cal.
Robinson Co., A. H., Massillon, Ohio
Rudy Furnace Co., Dowagiac, Mich.
Wise Furnace Co., Akron, Ohio

Furnaces—Warm Air
Agricola Furnace Co., Gadsden, Ala.
American Furnace Co., St. Louis, Mo.
The Beckwith Co., Dowagiac, Mich.
Brillion Furnace Co., Brillion, Wis.
Farris Furnace Co., Springfield, Ill.
Forest City-Walworth Run Fdy., Cleveland, Ohio
Fox Furnace Co., Elyria, Ohio
Henry Furnace & Fdy. Co., Cleveland, Ohio
Hess Warming & Ventilating Co., Chicago, Ill.
Langenberg Mfg. Co., St. Louis, Mo.
London Furnace Co., London, Ohio
Lennox Furnace Co., Marshalltown, Iowa
Syracuse, N. Y.
May Fiebeger Furnace Co., Newark, Ohio
Meyer Furnace Co., The, Peoria, Ill.
Midland Furnace Co., Columbus, Ohio
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
Payne Furnace & Supply Co., Beverly Hills, Cal.
Premier Warm Air Heater Co., Dowagiac, Mich.
Peerless Foundry Co., Indianapolis, Ind.
Robinson Co., A. H., Massillon, Ohio
Rudy Furnace Co., Dowagiac, Mich.
Standard Fdy. & Furnace Co., De Kalb, Ill.
Success Heater Mfg. Co., Des Moines, Iowa
Schwab & Sons Co., R. J., Milwaukee, Wis.
Waterman-Waterbury Co., Minneapolis, Minn.
Western Steel Products Co., Duluth, Minn.
Wise Furnace Co., Akron, Ohio

Gas Burning Attachments
Munkel-Rippel Heating Co., Columbus, Ohio

Grilles
Auer Register Co., Cleveland, Ohio
Harrington & King Perforating Co., Chicago, Ill.
Hart & Cooley Co., New Britain, Conn.
Independent Register & Mfg. Co., Cleveland, Ohio

Guards—Machine and Belt
Harrington & King Perforating Co., Chicago, Ill.

Handles—Boiler
Berger Bros. Co., Philadelphia, Pa.

Handles—Soldering Iron
Hyro Mfg. Co., New York, N. Y.

Handles—Furnace Door
Fanner Mfg. Co., Cleveland, Ohio

Hangers—Eaves Trough
Apex Gutter Hanger Corp., New York, N. Y.
Berger Bros. Co., Philadelphia, Pa.
Chase Brass & Copper Co., Waterbury, Conn.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Heat Regulation Systems
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Sheer Co., H. M., Quincy, Ill.
White Mfg. Co., Minneapolis, Minn.

Heaters—Cabinet
Fox Furnace Co., Elyria, Ohio
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
Payne Furnace & Supply Co., Beverly Hills, Cal.
Waterman-Waterbury Co., Minneapolis, Minn.

Heaters—Combination Water
Standard Fdy. & Furnace Co., De Kalb, Ill.

Heaters—Domestic Hot Water
Standard Fdy. & Furnace Co., De Kalb, Ill.

Heaters—School Room
Meyer Furnace Co., The, Peoria, Ill.
Western Steel Products Co., Duluth, Minn.
Waterman-Waterbury Co., Minneapolis, Minn.

Humidifiers
Diener Mfg. Co., G. W., Chicago, Ill.
Meyer & Bro. Co., F., Peoria, Ill.
Sheer Co., H. M., Quincy, Ill.

Lath—Expanding Metal
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Machines—Crimping
Bertsch & Co., Cambridge City, Ind.

Machinery—Culvert
Bertsch & Co., Cambridge City, Ind.
Interstate Machinery Co., Chicago, Ill.

Machines—Tinsmith's
Bertsch & Co., Cambridge City, Ind.
Dreis & Krump Mfg. Co., Chicago, Ill.
Hyro Mfg. Co., New York, N. Y.
Interstate Machinery Co., Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Iowa
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
The Stanley Electric Tool Co., New Britain, Conn.
Whitney Mfg. Co., W. A., Rockford, Ill.

Metals—Perforated
Harrington & King Perforating Co., Chicago, Ill.

Miters—Eaves Trough
Barnes Metal Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Braden Mfg. Co., Terre Haute, Ind.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Nails—Copper and Brass
Chase Brass & Copper Co., Waterbury, Conn.
Revere Copper & Brass, Rome, N. Y.

(Continued on page 54)

LET US PUT YOU IN THE ELECTRIC SIGN BUSINESS...

We supply everything
Except the Sheet Metal

HERE'S an opportunity to take on a line which will turn "prospects" into paying customers. We supply everything and tell you how to assemble METPRO Neon Tube Signs. Let us explain our ***Better Income Proposition.***

"Made by Sign Men For Sign Men"

PROTECTED BY NATIONAL PATENT CORPORATION CHICAGO

PROTECTION

Protected by bond issued by National Patent Corp.

Approved by National Board of Fire Underwriters.

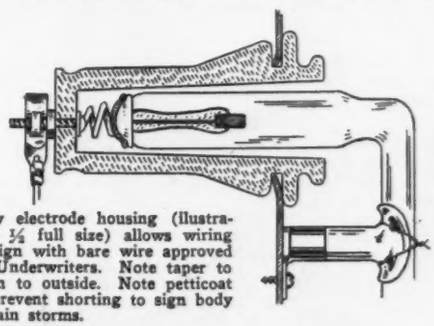
Guaranteed against defects or workmanship for a period of one year.

WE WILL ASSIST YOU—

with your sketches at a minimum charge. Mail us a rough sketch and we will make up a painted sketch or a full size layout of a sign which you will be proud to have in your city. . . . The sign in this illustration was assembled by a contractor, after designs drawn by us, and he made a real profit on it.

Write Today for Full Information

NEW ELECTRODE HOUSING



New electrode housing (illustration ½ full size) allows wiring of sign with bare wire approved by Underwriters. Note taper to drain to outside. Note petticoat to prevent shorting to sign body in rain storms.

Price .25 (Assembled) in Lots of 1000

METAL PRODUCTS, INC.
462-B FOURTH ST. MILWAUKEE, WIS.

TRADE **B B** MARK

"SHUR-LOCK" CONDUCTOR PIPE
"E-Z FIT" EAVES TROUGH
EAVES TROUGH HANGERS
"QUAKER CITY" MITERS
END PIECES, CAPS AND OUTLETS
PIPE HOOKS
PIPE FASTENERS
CONDUCTOR HEADS
ORNAMENTAL CONDUCTOR STRAPS AND ENDS

Look for B. B. on Every Piece—it is a Mark of Quality

SOLD BY LEADING JOBBERS EVERYWHERE

BERGER BROS. CO.
229 to 237 Arch St. Philadelphia, Pa
Western Office: 140 So. Dearborn St., Chicago

WHITNEY Lever PUNCHES

SAVE TIME, TEMPER AND MONEY
That's why they are
The Choice of **OVER 40,000** *Satisfied Users*

No. 1 Heavy Duty Punch

Here's an extra strong, reinforced and perfectly balanced punch for work that requires extra leverage. It weighs 22 pounds and is 34 inches long. Capacity ⅜ inch hole through ¼ inch iron. Punches and dies in 14 sizes from 5/32 to 9/16 by 1/32 inch. Insertable pipe handles.

No. 4—One Hand Tinner's Punch

Capacity, ¼ inch hole through 16 Gauge. Punches 1/16 inch to 17/64 inch by 1/64. Punch and Die stay in perfect alignment because side plates carry the strain. Has adjustable gauge to regulate holes from edge.

W. A. WHITNEY MFG. CO.
636 Race Street Rockford, Ill.

Ask Your Jobber for WAW ***Punches and Tools***

BUYERS' DIRECTORY

(Continued from Page 52)

Nails—Hardened Masonry
Parker-Kalon Corp., New York, N. Y.

Oil Burners
Crystal Oil Burner Corp., New York, N. Y.
McIlvaine Burner Corp., Evanston, Ill.
Silent Automatic Corp., Detroit, Mich.

Paint
Connors Paint Mfg. Co., Wm., Troy, N. Y.

Perforated Metals
Harrington & King Perforating Co., Chicago, Ill.

Pipe and Fittings—Furnace
Henry Furnace & Fdy. Co., Cleveland, Ohio
Lamneck & Co., W. E., Columbus, Ohio
Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Peerless Foundry Co., Indianapolis, Ind.

Pipe and Fittings—Stove
Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Pipe—Conductor
Barnes Metal Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Punches
Bertsch & Co., Cambridge City, Ind.
Hyro Mfg. Co., New York
Interstate Machinery Co., Chicago, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
W. A. Whitney Mfg. Co., Rockford, Ill.

Punches—Combination Bench and Hand
Hyro Mfg. Co., New York, N. Y.

Punches—Hand
Hyro Mfg. Co., New York, N. Y.
W. A. Whitney Mfg. Co., Rockford, Ill.

Putty—Stove
Connors Paint Mfg. Co., Wm., Troy, N. Y.

Radiator Cabinets
Hart & Cooley Co., Holland, Mich.

Ranges—Gas
The Beckwith Co., Dowagiac, Mich.
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
Richardson & Boynton Co., New York, N. Y.

Registers—Warm Air
Auer Register Co., Cleveland, Ohio
Forest City-Walworth Run Foundries Co. Cleveland, Ohio
Hart & Cooley Co., Holland, Mich.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Independent Register & Mfg. Co., Cleveland, Ohio
Lamneck & Co., W. E., Columbus, Ohio
Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Rock Island Register Co., Rock Island, Ill.
Symonds Register Co., St. Louis, Mo.

Registers—Wood
American Wood Register Co., Plymouth, Ind.
Auer Register Co., Cleveland, Ohio
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Regulators—Heat
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
H. M. Sheer Co. Chicago, Ill.
White Mfg. Co., Minneapolis, Minn.

Ridging
American Rolling Mill Co., Middletown, Ohio
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Rivets—Stove
Lamson & Sessions Co., Cleveland, Ohio
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Rods—Stove
Lamson & Sessions Co., Cleveland, Ohio

Rolls—Forming
Bertsch & Co., Cambridge City, Ind.
Interstate Machinery Co., Chicago, Ill.

Roofing Cement
Connors Paint Mfg. Co., Wm., Troy, N. Y.
Lastik Products Corp., Pittsburgh, Pa.

Roof Paints
Lastik Products Corp., Pittsburgh, Pa.

Roof—Flashing
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Roofing—Iron and Steel
American Rolling Mill Co., Middletown, Ohio
Central Alloy Division, Republic Steel Corp., Youngstown, Ohio
Inland Steel Co., Chicago, Ill.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Ryerson & Sons, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Roofing—Tin
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Taylor Co., N. & G., Philadelphia, Pa.

Rubbish Burners
Hart & Cooley Co., New Britain, Conn.

Schools—Sheet Metal Pattern Drafting
St. Louis Technical Institute, St. Louis, Mo.

Schools—Warm Air Heating
St. Louis Technical Institute, St. Louis, Mo.

Screws—Hardened Metallic Drive
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Parker-Kalon Corp., 200 Varick St., New York

Screws—Hardened Self-Tapping, Sheet Metal
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Parker-Kalon Corp., 200 Varick St., New York

Screens—Perforated Metal
Harrington & King Perforating Co., Chicago, Ill.

Shears—Hand and Power
Interstate Machinery Co., Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Ia.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
The Stanley Electric Tool Co., New Britain, Conn.
Viking Shear Co., Erie, Pa.

Sheet Metal Screws—Hardened, Self-Tapping
Parker-Kalon Corp., 200 Varick St., New York

Sheets—Alloy
Central Alloy Division, Republic Steel Corp., Youngstown, Ohio
International Nickel Co., New York, N. Y.

Sheets—Black and Galvanized
American Rolling Mill Co., Middletown, Ohio
Central Alloy Division, Republic Steel Corp., Youngstown, Ohio
Inland Steel Co., Chicago, Ill.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Rockford Sheet Steel Co., Rockford, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
Taylor Co., N. & G., Philadelphia, Pa.

Sheets—Iron
American Rolling Mill Co., Middletown, Ohio
Central Alloy Division, Republic Steel Corp., Youngstown, Ohio
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Sheets—Tin
Taylor Co., N. & G., Philadelphia, Pa.

Shingles and Tiles—Metal
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Sifters—Ash
Diener Mfg. Co., G. W., Chicago, Ill.

Sign Equipment—Electric
Metal Products Co., Milwaukee, Wis.

Sky Lights
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Snips
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Solder—Acid Core
Kester Solder Co., Chicago, Ill.

Solder—Self-Fluxing
Kester Solder Co., Chicago, Ill.

Solder—Rosin Core
Kester Solder Co., Chicago, Ill.

Solder
Kester Solder Co., Chicago, Ill.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Soldering Coppers
Revere Copper & Brass, Rome, N. Y.

Soldering Furnaces
Diener Mfg. Co., G. W., Chicago, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Specialties—Hardware
Diener Mfg. Co., G. W., Chicago, Ill.

Stars—Hard Iron Cleaning
Fanner Mfg. Co., Cleveland, Ohio

Tinplate
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Taylor Co., N. & G., Philadelphia, Pa.

Tools—Tinsmith's
Bertsch & Co., Cambridge City, Ind.
Dries & Krump Mfg. Co., Chicago, Ill.
Hyro Mfg. Co., New York, N. Y.
Interstate Machinery Co., Chicago, Ill.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Rockford Sheet Steel Co., Rockford, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
The Stanley Works, New Britain, Conn.
Viking Shear Co., Erie, Pa.
Whitney Mfg. Co., W. A., Rockford, Ill.

Torches
Diener Mfg. Co., G. W., Chicago, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Trade Extension
Copper & Brass Research Association
National Association of Flat Rolled Steel Manufacturers, Cleveland, Ohio

Trimmings—Stove and Furnace
Fanner Mfg. Co., Cleveland, Ohio

Vacuum Cleaner—Furnace
Brillion Furnace Co., Brillion, Wis.
National Super Service Co., Toledo, Ohio

Ventilators
Aeolus Dickinson Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Paul R. Jordan & Co., Indianapolis, Ind.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

Ventilators—Ceiling
Hart & Cooley Co., New Britain, Conn.
Henry Furnace & Fdy. Co., Cleveland, Ohio

Wood Faces—Warm Air
Auer Register Co., Cleveland, Ohio
American Wood Register Co., Plymouth, Ind.
Milcor Steel Co., Mil., Canton, Chgo., La Crosse, K. C.

RYERSON

IMMEDIATE SHIPMENT FROM STOCK

More than twenty kinds of prime quality sheets are carried in stock. There is a special sheet for every purpose. Also Bars, Angles, Rivets, Bolts, Tools and Metal-Working Machinery.

Write for Journal and Stock List

JOSEPH T. RYERSON & SON INC

Chicago Detroit | Milwaukee St. Louis | Jersey City Cincinnati | Buffalo Cleveland | Philadelphia Boston

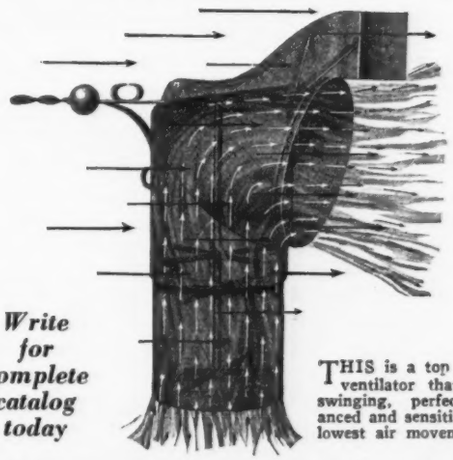
SHEETS

PERFORATED METALS

All Sizes and Shapes of Holes
In Steel, Zinc, Brass, Copper, Tinplate, etc.
For All Screening, Ventilating and Draining
EVERYTHING IN PERFORATING METAL

THE HARRINGTON & KING PERFORATING CO.
5649 FILLMORE ST.—CHICAGO, ILL., U. S. A.
NEW YORK OFFICE, 114 LIBERTY ST.

Aeroplane
ROTARY
VENTILATOR



Write for complete catalog today

THIS is a top balanced ventilator that is free swinging, perfectly balanced and sensitive to the lowest air movements.

THE main bearing is our own patented design. Simple and absolutely reliable under all conditions. It is of special bronze on steel, non-corrosive and of the one-ball type. It is practically frictionless. The Aeroplane is a correctly designed, highly efficient well made ventilator. It is well braced, reinforced with riveted steel segments and riveted and seamed throughout. You can sell it with confidence that it will do its work well and last long.

PAUL R. JORDAN & CO.
630 South Delaware St. Indianapolis, Ind.

CHICAGO STEEL SLITTING SHEAR
LIGHT—POWERFUL
DURABLE

Capacity 10 gauge sheets
Any Length or Width
Flat Bars 3/16x2"
Weight 22 pounds

Price $15.00 Net
F. O. B. Chicago

Made of pressed steel and equipped with hold-down. Blades of highest grade crucible steel. Most indispensable high grade shears made. Equal to other shears selling at over twice the price. *ORDER YOURS TODAY.*

DREIS & KRUMP MFG. CO., 7404 Loomis St., Chicago

DETROIT-CLEVELAND-BUFFALO
THE J.M.&L.A. OSBORN CO
EVERYTHING
USED IN SHEET METAL WORK
ASK FOR CATALOGUE OR PRICES

BERTSCH TREADLE SHEAR

SQUARES, TRIMS AND SLITS
all sheets 14 gauge or lighter

Write for Catalog "G" Today

BERTSCH & CO., Cambridge City, Ind.

The "Torrid" Furnace is designed to give a tremendous amount of heat, much more than that furnished by the ordinary tinner's furnace.

A fuel saver and generating machine of the finest quality made at the price.

GEO. W. DIENER MFG. CO.
404 North Monticello Ave. Chicago

Alphabetical List *of* Advertisers

Firms represented in this issue are identified by the folio of the page on which their advertising appears. Advertising which appears in alternate issues is marked with an asterisk.

THE BUYERS' DIRECTORY APPEARS ON PAGES 52 AND 54

WANTS AND SALES

Yearly subscribers to the AMERICAN ARTISAN may insert advertisements of not more than fifty words in our Want and Sales Columns WITHOUT CHARGE for three insertions.

Such advertisements, however, must be limited to help or situation wanted, tools or equipment for sale, to exchange or to buy, business for sale or location desired, and must reach our office ten days prior to date of publication. This privilege is not extended to manufacturers or jobbers—or those making a business of buying and selling used machines—employment agencies and brokers.

When sending advertisement state whether your name or blind number is to be used.

BUSINESS CHANCES

For Sale—My established tin and plumbing shop. This is in the best town between Mankato and Minneapolis. A big territory to draw from. Reason for selling, il health and old age. Has been running the past 40 years. Good tools, 8 ft. brake and all that is necessary to make it a good shop. Address F524, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

For Sale—Sheet metal and furnace business near Los Angeles, Calif. All new equipment. Physical ailment forcing me out. A real opportunity for an energetic man or partnership to buy right. $2,000.00 can handle this now. Investigate today. Address R-524, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

For Sale—Good established Tin Shop, Roofing and Furnace Business. Best location in Ohio town of 50,000. Will sell very reasonably for cash. Good opportunity for a hustler. Selling on account of ill health. Address S-524, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Wanted to Buy—Half or whole interest in sheet metal shop preferably located in Kansas, Missouri, Iowa or Oklahoma, or will go in as working partner in same. Can furnish A-1 references. Address P-523, AMERICAN ARTISAN, 139 N. Clark Street, Chicago, Ill.

SITUATION WANTED

Situation Wanted—Sheet metal shop superintendent, thoroughly experienced in assuming full responsibility on all types of inside shop fabricating as well as carrying to completion outside construction jobs. Can handle any number of men satisfactorily. Many years of experience working for the largest shops and contractors in the country. Experienced in ventilation, humidity control, blower systems, etc. Will go anywhere. Address K-523, care AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

SITUATION WANTED

Sheet Metal Mechanic, 21 years' experience in ventilating, skylight, cornice, furnace, restaurant and general sheet metal work desires position. Capable of taking any sized job. Experienced foreman and estimator. Best of references from former employers. Married, sober, reliable and anxious to connect with firm where there is a future. Employed, but wish to make a change. Address R-523, AMERICAN ARTISAN, 139 N. Clark Street, Chicago, Ill.

Situation Wanted—By a first class sheet metal mechanic with 20 years' experience—12 years as working foreman. Can handle any kind of sheet metal contract, large or small. Would like to hear from some really alive shop—South preferred. Please state salary paid for permanent situation. Address P. O. Box 206, Andover, New York. X-523

Situation Wanted—By a combination man—plumbing, sheet metal and furnace. Twenty years at the trades. Fourty years old, married, steady, sober; good on warm air heating, gas furnaces and lead work. Five years foreman. Can take charge and can leave at once. Address Y-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation Wanted—Some sheet metal jobber or furnace manufacturer is looking for a man for a road position that has had 28 years' experience in the sheet metal business. 45 years old, married, and can give references from most any section of the country. Address Z-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Position Wanted—By experienced sheet metal worker. Experienced in all branches of the trade, on inside or outside work, gutters, furnaces, ventilation, and general work of any kind. Can run a shop, lay out and estimate. Middle aged, sober, and good mechanic. Prefer steady job. Address A-524, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Well known heating man of many years' experience as salesman and salesmanager in warm air, steam and water field will be open for change on August 1. Has specialized in fan layouts or can handle gas or oil. Address T-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation Wanted—By practical tinner on furnace and gutter work. Active, steady and reliable. Would like steady work in small town or city in Illinois. Can come at once. Address J-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Situation Wanted—In small town with concern in need of a good all around sheet metal worker and furnace man. Capable of taking full charge of shop and can furnish best of reference. Address Bert Hawkins, 314 N. Howell, Owosso, Mich. W-523

Position Wanted—Some slate manufacturer or slate jobber of prominence is looking for a man who can sell slate. For further details address T-524, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Position Wanted—Engineer, furnace salesman extraordinary open for immediate connection. Address W-524, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

MISCELLANEOUS

For Sale—Slightly used Utica Smokeless Cast Sectional Steam Boiler, 3000 feet of radiation. Address E. A. Knabe, Rock Falls, Illinois. C-524

HELP WANTED

Wanted—A live wire combination plumber and tinner to act as assistant manager; must be reliable, a business getter and know the trade. An opportunity for a good man. Two experienced helpers also needed. Address Independent Supply Co., Inc., West Frankfort, Ill. B-524

Wanted—Sheet metal worker and furnace man. One steady and reliable who understands heating and ventilating and can work from blue prints and understands how to read blue prints. This is a good steady job for the right man. Address Barnett's Sheet Metal Works, Dodge City, Kan. L-524

Wanted at Once—Combination tinner and plumber between 30 and 50 years of age. Must be good mechanic and neat. Prefer a man who has worked in a small town. Wages $30.00 per week. No misfits wanted. Address Hinckley Hardware Company, Hinckley, Ill. J-524

Wanted—Tinner and furnace man. Prefer young married man nover over 35 years of age, with seven or eight years of experience. Steady job for right man and we will pay all he is worth. Address L-523, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Salesman Wanted—Some knowledge of heating to sell McIlvaine Oil Burners. Good field to work in. You must act quick as season is well under way. Address H. R. Wolfe Sheet Metal Works, 301 East Broadway, Waukesha, Wis. K-524

Wanted at Once—First class radiator man. Steady work year around. Must be able to handle any kind of radiator and do repair work. Address J. H. Barnett, 312 W. Front St., Dodge City, Kan. H-524

TOOLS AND MACHINES

For Sale—Tinners' Machines, square shears, rolls, folders, etc., also large pipe dies, cutters and wrenches—safe, typewriter, etc. Ask for price and description of what you can use. Address City Tin Shop, Harbor Beach, Mich. D-524

Wanted—One second hand Brillion Vacuum Cleaner complete. Must be reasonable and in good condition. Address O-524, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

BOOKS

The Revised Edition of the New Metal Worker Pattern Book by Kittridge and Associates is one book that should be in every shop. As a reference book alone it is indispensible. Over 500 9x11-inch pages with 895 illustrations. It covers the principles underlying practically every problem that is likely to come up in daily practice. Beginning with the selection and use of drawing tools, the author explains linear and geometrical drawing so clearly that one who has had nop revious knowledge of arithmetic or drawing may understand these essentials and apply them. The most approved methods of pattern cutting are also given in the course of the work... Price, $6.00, postpaid. Order from the Book Dept., AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

BOOKS

Exhaust and Blow Piping, by Hayes—Exhaust and Blow Piping has had an unusually big demand. A fresh supply is now off the press and is in our hands for immediate delivery. It has an invaluable treatise on the planning, cost, estimation and installation of fan piping in all its branches, giving all necessary guidance in fan work blower and separator construction. 159 pages, 5x8. 51 figures. Cloth. $2.00. Order from Book Department, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Illinois.

BOOKS

Manual of Automotive Radiator Construction and Repair, by F. L. Curfman and T. H. Leet—Anyone interested in Radiator Repairing will find the 185 pages of practical instructions and 120 illustrations showing actual construction and repairing a big help. In a condensed manner some four to five thousand answers to questions are given. It is thoroughly practical, as both authors are men of wide experience in this work. Printed in large, easy to read type. Measures 5¾x9 inches. Price $2.50. Order from Book Department, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Make 1930 Your Most Successful Year

Advancement comes with a Comprehensive Training like we give in Sheet Metal Design and Pattern Drafting. It brings you more steady work—more yearly income—more satisfaction for yourself and family.

☐ SHEET METAL DESIGN AND DRAFTING
☐ FAN HEATING VENTILATING ENGINEERING
☐ BUSINESS CONTRACTING AND ESTIMATING

We teach you in your own home, Personal, Clear, Direct.

Write today, NOW—full information sent on request—no obligation

ST. LOUIS TECHNICAL INSTITUTE 4543 CLAYTON AVE. ST. LOUIS, MO.

NEW PEXTO MACHINES AT CUT PRICES

We always sell at small margin of profit for cash and have a large turnover. Right now we need room on our floor and will dispose of several NEW PEXTO machines at special prices—**write for full details and prices.**

ALSO BARGAIN PRICES ON THESE USED MACHINES

SEND FOR OUR STOCK AND PRICE LIST TODAY.

1— 72" 14 ga. Niagara Power Square Shear
1— 96" 18 ga. Pexto Power Square Shear
1—120" 18 ga. Niagara Power Square Shear
1—120" 14 ga. Geo. A. Ohl Power Square Shear

We always have on hand the largest stock of new and used sheet metal machines and tools in the middle west

SPECIAL. 25 brand new ¼ H.P. A.C. Motors in original boxes—at a bargain.

INTERSTATE MACHINERY COMPANY
601 WEST MONROE STREET CHICAGO, ILLINOIS

SPECIAL NOTICE!

To Manufacturers in This Industry

The problem of preparing correct, attractive and forceful trade paper and direct mail copy can be solved economically. Whether you are interested in one advertisement or direct mail piece or an entire campaign we advise you to consult us. We have a wide experience in the warm air heating industry. MAT FRIEDMAN & ASSOCIATES, 155 N. Clark St., Chicago.

G523

SPECIAL NOTICES

The Rate for Special Notices —displayed want ads—

$3.00 per inch per insertion
When sending copy, state whether your name or blind number is to be used—also how many insertions are desired.

PATENTS
HUBERT E. PECK
Patent Attorney
Barrister Bldg., WASHINGTON, D. C.

Increase your income—with side line sales of high priced specialty furnace. Yields big returns; steady repeater; proven successful over 10 years; used in homes and public buildings; big advertising and sales help to dealers. Territories open. Address P-524, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

BOOKS

Here are the two books that most sheet metal workers and contractors classify as the most complete books on Sheet Metal Pattern Cutting. The Universal Sheet Metal Pattern Cutter, Vol. 1, deals with every phase of inside work, including Heating, Ventilating, Blower and Exhaust Piping Connections, Marine Sheet Metal Work, Automobile Sheet Metal Work, Machinery and Belt Guards, etc., Mensuration applied to Sheet Metal Work, etc., with many features of construction and Labor-Saving Methods are also given in detail.

Vol. 2 deals with every form of Outside and Architectural Sheet Metal Work. A treatise on Drawing, Full Size Detailing and Lettering, Construction of Cornices, Skylights, Molding, Copings, Electrically Illuminated Signs, etc.

Cloth bound, 400 pages each volume. Price, $7.50 per volume, postpaid. Order from Book Department, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Standard Practice in Sheet Metal Work is the name of the big book written, compiled and published by the National Sheet Metal Contractors Association. It took years of hard, careful planning and work to produce this book. No other book like it—it describes and illustrates the standard method of designing, working and installing and erection of all forms of sheet metal work. Gutter construction of all kinds is shown in detail. Blow pipe work, skylight, roofing, cornice, ventilating, warm air heating, etc. It's the best $10.00 book investment you can make. No matter what other books you have you need this book. Order from the Book Dept., AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

Send for catalog today

VIKING SHEAR
Compound LEVER Handle—Removable Blades
A child can work them
VIKING SHEAR CO., Erie, Pa.

"We used 100,000 pounds of ANACONDA COPPER on the new Manhattan Company Building," *says Caleb Ringle . . . .*

Caleb Ringle, President of Jacob Ringle & Son, Jersey City.

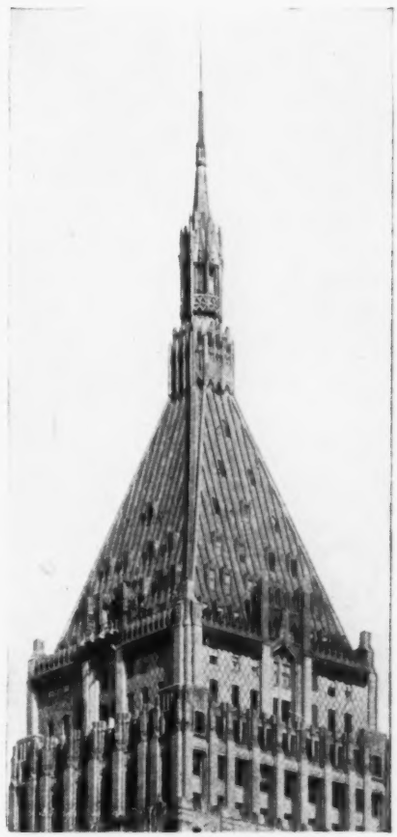
THERE WAS A JOB to delight the heart of a sheet metal man! A magnificent building . . . an opportunity to do a real job not only in fabricating but installing . . . complete agreement from the start among owners, architect and contractor that copper was the material to use. Read what Mr. Ringle says about copper and why he recommends it:

"We know that copper reduces upkeep expenses. It is our experience that the owner, not only of the huge building, but also of the small home, enjoys a real economy when sheet metal work of Anaconda Copper is installed. For this reason we always recommend this durable metal, with the result that our list of customers is steadily growing."

There is a decided trend toward copper sheet metal work, and it is a big help to mention Anaconda by name in your estimates. Installed by capable, experienced workmen, this product always gives satisfactory service.

The unvarying quality and workability of Anaconda Copper are due to exacting control of each operation in its production from ore to finished product. Stocks of Anaconda Copper in rolls, "Economy" Strips and flat sheets are maintained by leading distributors. The American Brass Company, General Offices: Waterbury, Connecticut.

Installing Anaconda Copper, supplied through Fitz, Dana & Brown, on the base of the tower. Mr. Ringle stated that the easy workability, accurate gauge and flatness of the sheets were a big help in completing the job on time.

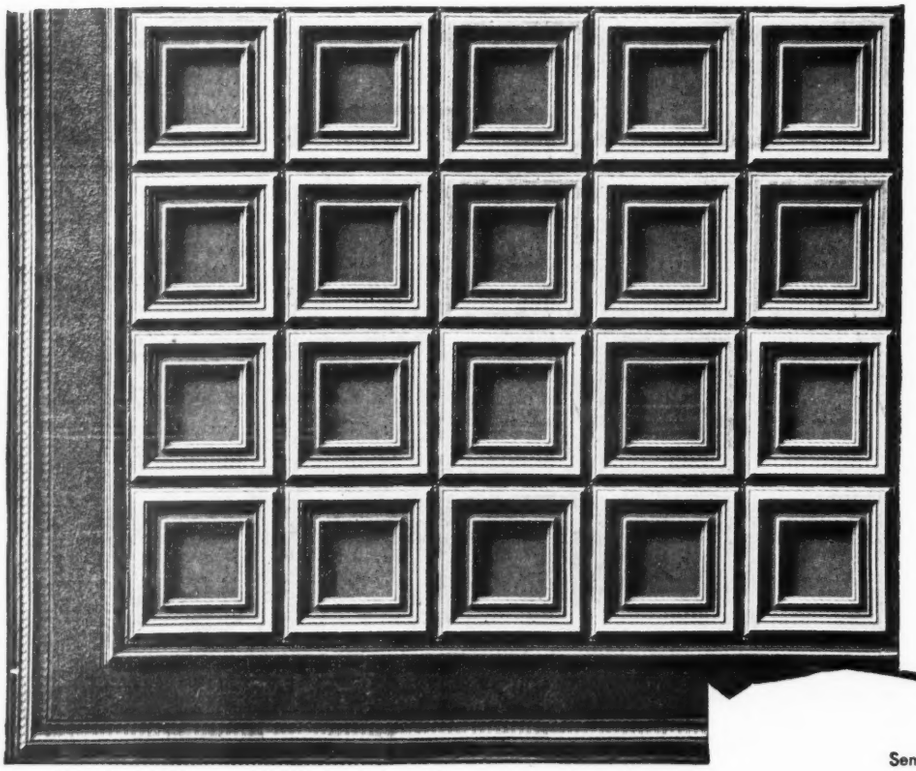


Tower of the recently completed Manhattan Company Building, New York City, which is covered with Anaconda Sheet Copper, lead coated for color effect. The building is 71 stories high to the bottom of the spire. The tower itself is 177' high. H. Craig Severance, Inc., Architects. Yasuo Matsui, Associate Architect. Starrett Brothers, Inc., General Contractors.

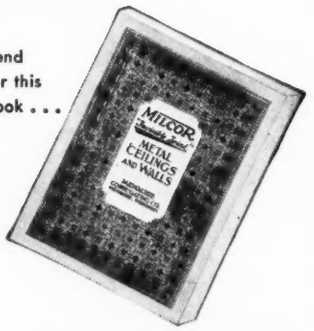
ANACONDA
from mine to consumer

Sheet Metal Work of ANACONDA COPPER

Look for the name ANACONDA in every sheet and strip. Leading Supply Houses carry it.



Send for this Book . . .

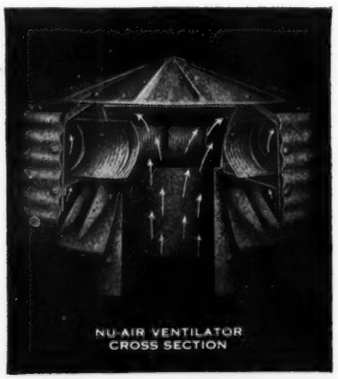


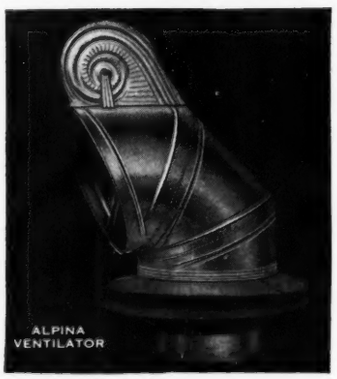
Attractive Profits!

Selling MILCOR Metal Ceilings to Churches, Schools and Stores

EVERY retail shop, department store, church or school that needs redecorating is a prospect for *Milcor* Metal Ceilings. Canvas your territory. Suggest new ceilings of *Milcor* design . . . free from plaster cracks . . . fire-safe . . . and economical! The *Milcor* book of ceiling and wall designs shows hundreds of appropriate patterns that are available for immediate use. Send for a copy . . . ***now!***

And remember that *Milcor* makes a full line of ventilators of all kinds . . . all up to *Milcor's* high standard of material and workmanship . . . . Write the nearest office for complete information.


NU-AIR VENTILATOR CROSS SECTION


ALPINA VENTILATOR

MILCOR STEEL COMPANY

(formerly Milwaukee Corrugating Co., Milwaukee, Wis. and The Eller Mfg. Co., Canton, Ohio)

Main Offices: **1417 Burnham Street, Milwaukee, Wis.**

Plants at Milwaukee, Wis., Canton, Ohio, La Crosse, Wis., Chicago, Ill. and Kansas City, Mo.

Sales Offices: New York, 418 Pershing Square Building; Boston, Mass., 726 Little Building; Atlanta, Ga., 207 Bona Allen Building; Minneapolis, Minn., 642 Builders Exchange Building; Little Rock, Ark., 104 W. Markham Street

• • • Save with Steel • • •

MILCOR PRODUCTS